The SOUTHERN ECONOMIC JOURNAL

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The SOUTHERN ECONOMIC JOURNAL

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ANNOUNCEMENT

The twenty-fourth annual conference of the Southern Economic Association will be held on November 19 and 20, 1954 at the Beuna Vista Hotel in Biloxi, Mississippi. The committee on local arrangements consists of P. F. Boyer, Louisiana State University, Chairman; J. A. Greene, Jr., Mississippi Southern College; and Howard W. Wissner, Tulane University.

President John B. McFerrin has appointed the Nominating Committee for the 1955 officers of the Southern Economic Association. It consists of Charles P. Anson, Alabama Polytechnic Institute, Chairman; Cecil C. Carpenter, University of Kentucky; and Frank T. de Vyver, Duke University. Members are invited to suggest names to this committee.

HOWARD R. SMITH
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James E. Ward

Twenty-second President of the Southern Economic Association, 1950–1951

JAMES EDWARD WARD

Twenty-second President of the Southern Economic Association, 1950–1951

James Edward Ward was born in Norfolk, Virginia on August 31, 1907. He died in Nashville, Tennessee on April 23, 1954. After completing his undergraduate work at the University of Virginia in 1929 he entered the training program of a steel company. In 1930 he returned to the University of Virginia where he was for several years an instructor in the Department of Rural Social-Economics and a graduate student under the direction of Wilson Gee. After receiving his M.A. degree in 1931 he studied during 1932–33 at Harvard University under the guidance of John D. Black. In 1935 he received the Ph.D. degree from the University of Virginia, his dissertation topic being "Thomas Jefferson's Contributions to Agriculture."

From 1935 to 1939 Dr. Ward taught economics at Clemson Agricultural College, where he was professor of economics and head of the Division of Social Science from 1939 to 1947. In the latter year he moved to George Peabody College as professor of economics and soon became an acknowledged leader in both the college and the city of Nashville.

The Southern Economic Association was one of Dr. Ward's important professional interests. From 1941 to 1947 he served as secretary-treasurer of the Association. In 1949–50 he was its first vice-president and in 1950–51 its president. From 1948 to the time of his death he was Tennessee correspondent for the *Southern Economic Journal*. He was also a member of the American Economic Association and the American Arbitration Association.

Dr. Ward's especial interest was labor-management relations. During World War II he was a part-time staff member of the U. S. War Labor Board office in Atlanta, Georgia. He was also occasionally a private consultant on labor problems. A part of the last evening of his life was spent in preparing three lectures upon "The Economics of Labor Legislation" for delivery at the U. S. Air Force Arnold Engineering Development Center at Tullahoma, Tennessee.

The writings of Dr. Ward included his dissertation, numerous articles in the University of Virginia *Newsletter*, his contributions to the *Southern Economic Journal*, and many contributions to religious publications, including a symposium upon economics and religion. Perhaps Dr. Ward's greatest contributions to his profession were his clear and forceful classroom teaching and his unexcelled ability to deal successfully with human beings—from the least privileged to the overprivileged, from the unlettered to the scholarly.

VOLUME XXI NUMBER 1

The SOUTHERN ECONOMIC JOURNAL

July 1954

INFLATION IN AN EXPORT ECONOMY

WALTER HERENCHAK

Yale University

I. *Introduction: The Inadequacies of Keynesian "Gap" Analysis*

Dissatisfaction with the Keynesian explanations of the inflationary process[1] has been steadily growing. Klein, for example, has isolated the following defects in those explanations:[2]

(1) The use of the method of comparative statics to analyze the inflation mechanism. It is true that that in conditions of below-full employment the static system has validity and usefulness in explaining the determination of the several crucial (aggregative) variables of the economic system, such as the levels of employment and output, the rate of interest, etc. But where the problem is a rise in aggregate demand in the face of full employment (or of "bottlenecks" at less than full employment) sufficient to start an inflationary movement of prices, static analysis can only determine the size of the inflationary gap at different levels of aggregate demand, and can reveal little or nothing concerning the more relevant question of the speed of inflation. To consider the latter question—i.e., the actual movement of prices over time—the system of analysis must be made dynamic by the inclusion of strategic time lags, e.g., between the receipt and expenditure of income, between wage and price changes, and so on. Koopmans, Smithies, Turvey, and Duesenberry,[3] among others, have formulated lagged models to explain the inflationary process.

(2) The omission of stocks (of goods, liquid assets, etc.) and the almost complete reliance on flows to explain the phenomenon of the gap. There can be no doubt that flows are important to any analysis of inflation, indeed perhaps of primary importance, but the disregard of the effect of accumulated stocks of assets on consumer and business expenditure patterns leaves the analysis incomplete. An examination of post-war consumer spending in the United States, for

[1] J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace and Company, 1936), Chap. 21; J. M. Keynes, *How to Pay for the War* (New York: Harcourt, Brace and Company, 1940).

[2] Lawrence R. Klein, *The Keynesian Revolution* (New York: Macmillan Company, 1947), Chap. 6.

[3] T. C. Koopmans, "The Dynamics of Inflation," *Review of Economic Statistics*, 1942, pp. 53–65; A. Smithies, "The Behavior of Money National Income Under Inflationary Conditions," *Quarterly Journal of Economics*, 1942, pp. 113–128; R. Turvey, "Some Aspects of the Theory of Inflation in a Closed Economy," *Economic Journal*, 1951, pp. 531–543; J. Duesenberry, "The Mechanics of Inflation," *Review of Economic Statistics*, 1950, pp. 193–216.

example, would be misleading if no cognizance were taken of the role of assets. Indeed it is possible to maintain that in the years following 1946 the asset-effect on consumption outweighed the income-effect.

The Keynesian analysis of inflation is particularly unsuited for the inflationary process in under-developed economies whose livelihood is geared closely to fluctuations in the balance of payments. Clearly, and as it was intended, the Keynesian framework is applicable primarily to a closed and developed market economy (the proto-type being the United States) where the internal stability of the economy is relatively unaffected by movements in the balance of payments. Under these conditions the strategic equilibrium condition is Investment (I) = Saving (S), and I is the "tail" that wags the output and employment "dog." But in an export economy where domestic saving and investment are traditionally negligible, the strategic elements, quantitatively and qualitatively, in the explanation of fluctuations are exports, imports and capital movements. Deficits and surpluses in the balance of payments are usually the initial shocks which ramify throughout the economy and result in fluctuations in output, employment, and money supply.[4] Hence this paper will be primarily concerned with the relation of the international transactions of an export economy to inflationary movements within that economy.

Finally, a more decided emphasis will be placed on the impact of monetary phenomena on the inflationary process in the under-developed area. Indeed, the position will be taken that in many cases the Quantity Theory, in its more sophisticated "cash-balance" modification, has validity. Keynesian "liquidity preference" theory is, as a result of the undeveloped nature of the capital and money markets, inapplicable to most of these export economies. Typically holdings of idle cash are almost nil; some factors cited[5] in explanation of this phenomenon are the lack of broad security markets and opportunities for future conversion of money into other credit instruments, the lack of confidence in the currency and banks (typical experience is currency depreciation; appreciation is quite rare), and the high returns on investment due to intense capital shortages. Under these circumstances money held by individuals is primarily for transactions purposes, and characteristic velocities in the undeveloped areas tend to be higher than in market economies.[6] Thus fluctuations in the balances of payments, which immediately result in corresponding changes in money supply (where conscious sterilization is not being practiced), are rapidly translated into price level changes.

An even more significant aspect of the inflation problem in an exporting country is that externally-determined prices, those of exports and imports, have a major impact on the general price level within the country. The dominance of

[4] Such deficits and surpluses may serve as channels for the exportation of local inflationary or deflationary pressures, as well as for the importation of foreign deflationary or inflationary pressures. See below, Section 5, p. 15.

[5] H. C. Wallich, *Monetary Problems of an Export Economy: The Cuban Experience, 1914–1947* (Cambridge, Mass.: Harvard University Press, 1950), Chap. 12.

[6] Or conversely, the desire to hold idle balances in the export economies is a much less significant factor than in developed areas.

the external sector and the influence of world prices for exports and imports on domestic prices make the export economy especially vulnerable to changes in world economic conditions. Typically inflationary and deflationary stimuli are "imported" from the industrialized economies which are the principal trading partners of these countries. Experience in the past has shown, especially in many of the Latin American republics, that rather than attempt to neutralize the impact of external shocks, the internal sector has been prone to amplify them. Through expansionary activities in times of an active balance of payments and deflationary activities in times of a passive balance, these economies have intentionally or unintentionally followed the "rules of the game" of the traditional international gold standard.

II. *Salient Structural Features of the Export Economy*

It is the thesis of this paper that the mechanism of inflation in an export economy is essentially different from that in more developed (market) economies, and that these differences can be traced to differences in the economic structure. One can normally delineate four major sectors of economic endeavor in the make-up of the GNP of a typical export economy: agricultural production of subsistence crops for domestic consumption; production of export crops and/or mining of raw materials for external markets; secondary trades, such as transportation, wholesaling and retailing, and personal services; and governmental activity. Activities devoted to production for export are paramount, whence the name "export economy." Typically, exports amount to between 15 per cent and 40 per cent of GNP[7], though these figures do not measure the real importance of foreign trade to the economy, since many secondary pursuits such as transportation are themselves dependent on foreign trade. It is no exaggeration to say that foreign trade is the "lifeblood" of these economies.

Characteristically, almost 100 per cent of exports are agricultural or raw material, while almost all imports are finished or semifinished manufactured items (both for immediate consumption and for investment purposes). Thus export economies typically sell their goods in volatile, competitive world markets and buy in relatively shielded price-inflexible markets. This disparity is further aggravated by the fact that the exports of the under-developed countries are normally comprised of but two or three basic commodities, and hence internal stability and prosperity is made to rest on an extremely narrow base. Since the world demand for imports of any given country and that country's supply of exportable goods are quantitatively insignificant in the world markets,[8] prices for exports and imports are determined independently of the export economy. The position of the economy in this regard is therefore analogous to that of the firm under pure competition which buys and sells factors and goods at market-determined (competitive) prices. But whereas the firm still has the theoretical

[7] This latter is, of course, a rough approximation since GNP data are rarely available for the export economies.

[8] There are, of course, some outstanding exceptions: Brazil for coffee, Chile for copper, Bolivia for tin, etc.

choice respecting size of output, the export economy in most cases is found with supply inelastic to price-cost changes.[3] Thus the under-developed area is subject to a double-edged source of instability.

Significant also is the geographical pattern of trade of the under-developed country. Usually an overwhelming portion of foreign trade is with a large industrialized economy in North America or Europe. The various business fluctuations of the industrial nations are major problems for these smaller nations.

The dependence of the export economy on foreign trade extends to its fiscal structure, since the largest single item of revenue is custom duties on exports and imports. Though when properly managed the custom duties could be sturdy aids in counter-cyclical activities (contributing to a budget surplus in times of prosperous trade activity and to a deficit when trade falls off), political pressures usually prevent this from happening. Hence there is a strong inflationary bias arising in the government sector: budget surpluses are nonexistent, while bank-financed deficits are the common rule both in depression and prosperity. The political instability of these countries, coupled with the institutional opposition to leaving unspent revenues in Treasury vaults, helps to exaggerate the impact of inflationary stimuli on the economy.

Prices in the export economy can be most conveniently divided into three components, some average of which gives the "general" price level for the economy as a whole. There are agricultural prices (of goods for domestic consumption), prices of manufactured goods, and prices of imports. For purposes of analysis it is useful to assume that: (1) agricultural prices are determined by the operation of competitive forces in the economy; (2) industrial prices are determined on the basis of a cost-plus mark-up scheme (the "full cost pricing principle"), where the average cost can be represented simply as average wage cost; and (3) import prices (as well as export prices, of course) are determined externally. This breakdown is in fact a close approximation to reality for many export economies.

Throughout the discussion that follows (except where explicit notice is given) stable exchange rates between the currency of the export economy and its trading partners will be assumed. This will preclude changes in exchange rates from influencing inflationary developments and will help focus attention on price and income changes as equilibrators of the balance of payments.

III. *"Bottleneck" Inflation*

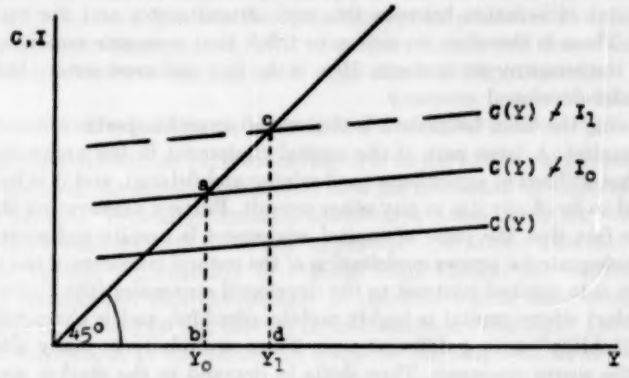
We can distinguish in Keynes' analysis of inflation two separate mechanisms, one which we might call the "general case" and the other the "special case." The "general case" is the familiar gap inflation occurring at full employment. Thus, given the simple (static) Keynesian system

$$Y = C + I$$
$$C = C(Y)$$

[3] Agricultural and raw material producers always tend—where no government restriction program is in force—to produce at maximum capacity regardless of price. Hence the short-run supply curve of exports approaches the vertical at the level of full capacity.

$$Y = Y(N)$$
$$S = I$$

where Y is income (output), C is consumption, I is investment (exogenous), N is employment, and S is saving, it is possible to determine the height of the inflationary gap. Graphically,



In this graph Y_0 is the level of real income at full employment (N_0). Since full employment output is fixed, changes in money income (Y_0P) define changes in the "general" price level (P). At any output up to Y_0 increases in money demand (YP) result in increases in output and employment at stable prices; at points above the full employment level of demand, output is no longer expansible and hence an inflationary gap appears. In the model presented here the gap arises in two ways: (1) by a rise in exogenous investment (e.g., from I_0 to I_1), or (2) by a rise in the propensity to consume. The gap in the figure can be measured in various ways, for example, by the distance $\overline{cd}$ minus $\overline{ab}$, or by the distance $\overline{Y_0Y_1}$, which measures the increase in output that would be required to restore equilibrium.

In a developed market economy there is good reason for believing that inflation does not seriously threaten at levels below full employment, since labor is relatively mobile between various sectors of the economy and capital equipment is both expansible and substitutable. Under these circumstances serious bottlenecks are not general below the level of full employment; the serious bottleneck is the labor ceiling itself, and this becomes critical *at* full employment.

But this is not the case for under-development areas. Here the Keynesian "special case" becomes the general one due to the unique structure of the factor markets in these areas. A much larger portion of the labor force is devoted to agricultural pursuits (and mining and fishing where these are possible) in which a high degree of immobility is the rule.[10] In contrast to more developed economies the pecuniary calculus plays but little part in the determination of labor distribu-

[10] The U. N. Statistical Office of the United Nations, *Statistical Papers*, Series E, Number 3, 1951, p. 6, Table 4.

tion through the economy. Custom and tradition are more potent determinants. Wage differentials which at some level are sufficient to induce labor mobility in the industrialized economies tend generally to be ineffective in overcoming the institutional barriers to mobility in the under-developed economies. The inevitable result of this fact is under-employment or "concealed unemployment" due to highly inefficient utilization of labor. Furthermore, there is a relatively large amount of isolation between this agricultural sector and the rest of the economy. There is therefore no reason to think that economic conditions in all sectors of the economy are uniform. Here is the first and most serious bottleneck in the under-developed economy.

Reinforcing the labor bottleneck is that of the second important factor of production, capital. A large part of the capital equipment in the under-developed areas is that utilized in agriculture (and mining and fishing), and it is too highly specialized to be of any use in any other pursuit. Further aggravating this problem is the fact that the state of capital equipment is usually rudimentary and grossly inadequate for proper exploitation of the natural resources of the country. This again is in marked contrast to the developed economies (the United States in particular) where capital is highly mobile, plentiful, and is characterized by high "shiftability" among different uses. There are relatively many alternative uses for the scarce resources. Thus shifts in demand in the market economies, assuming employment is maintained, are met fairly rapidly by a transfer of capital (and labor) into the more profitable lines, and the appearance of pools of unemployed or under-employed factors of production is not so marked as in the export economies.

The consequence of high inelasticities in the supply of labor and capital is a high inelasticity of supply of final products, especially in the export sector. Furthermore, in those countries which are primarily agricultural-exporting, supply is subject to the vagaries of climatic conditions. These tend to emphasize the disequilibrating tendencies emanating from the supply side. Where supply is nonresponsive to demand (and price) changes, the price mechanism is inadequate to restore equilibrium among the strategic variables of the system. The consequence of this is volatile changes in money incomes and erratic movements in prices, which are disruptive of economic activity in general. The full employment level for the factors of production no longer is the "bench-mark" from which to measure inflationary and deflationary movements.

What we wish to establish here is that inflation must be dissociated from the full employment premise. Inflation is not incompatible with unemployment; indeed, their coincidence is a common rule in the export economies. The existence of serious bottlenecks in one segment of the labor sector (or in productive capacity, essential raw materials, etc.) means that rises in effective demand in one sector, e.g., foreign trade, are prevented from spilling over into other sectors in terms of increases in output and employment and the result is inflationary rises in prices even though substantial unemployment exists in the bottleneck sector. For the under-developed economies, as a rule, inflationary movements will be generated in the foreign trade sector through improvements in the balance of

payments, while the bottleneck will be the supply and immobility of agricultural labor.

Venezuela currently exhibits these phenomena quite clearly. Large world demands for Venezuelan oil (primarily from the United States) have resulted in large dollar surpluses for the country and a consequent increase in its gold and dollar reserves. This has created prosperity conditions for those working in and supplying factors and goods to the oil industry, and price levels in the cities are severely inflated. Concomitantly, the agricultural sector still shows considerable under-employment with no immediate signs that this disparity will be relieved.[11]

IV. *The Balance of Payments and Inflationary Movements*

In the under-developed export economy it is to the balance of payments rather than to domestic saving and investment that one must look for explanation of the cyclical process. Typically, domestic investment amounts to less than 10 per cent of GNP while exports constitute 15 per cent and above. This fact combined with the cyclical vulnerability of exports helps explain the familiar conflict between internal and external stability so characteristic of these economies.[12]

What is the nature of this conflict in an inflationary upswing? Let us assume that the economy is at the bottleneck stage (at full employment or below), and there is no conscious attempt at neutralization or sterilization by the Treasury or central bank. Exchange rates remain stable. An autonomous increase of export demand is injected into the system.

The immediate effect of this is to increase exporters' incomes. National income, therefore, is increased initially by the full amount of the export surplus and eventually by a multiplied amount depending on some simple multiplier such as

$$\frac{1}{b+u}, \qquad 0 < b + u < 1,$$

where b is the community's marginal propensity to save and u is the marginal propensity to import, both being functionally related to national income. The secondary repercussion is on the domestic money supply; since the central bank pays for the increase in foreign exchange in domestic money, the money supply increases by the amount of the rise in exchange. But more significantly the foreign exchange (or gold) constitutes reserves of the banking system, and a net

[11] Even industrialized economies have not been exempted from this occurrence, a somewhat similar case appearing in the United States during the 1920's. A severe depression of prices and employment characterized American agriculture in this period while the industrial sector was prosperous, with rising prices and high employment. The most critical bottleneck was probably the immobility of agricultural labor which, coupled with the over-production of agricultural commodities as a legacy of the war, resulted in a serious reversal of the terms of trade against agricultural producers.

[12] A recent study published by the United Nations demonstrates that not only are export prices of the primary-producing countries subject to continual wide variation, but that, in general, fluctuations in quantities tend to coincide with those of prices. Thus swings in export *proceeds* are wider than swings in either prices or volumes separately. United Nations, *Instability in Export Markets of Under-Developed Countries*, 1952.

increase provides a base for a multi-fold expansion of the money supply. The resulting easy availability of credit adds to the effect of the excess of purchasing power already in the hands of exporters and provides a sufficient condition for an inflationary rise in prices. Since the economy is at the bottleneck stage (by assumption), the increase in effective demand is not matched by increases in aggregate supply, and the consequence is rising prices for both agricultural and manufactured goods.

These are the factors constituting the "demand-pull" aspect of an inflationary upswing. We have neglected to mention the equally important "cost-push" side and especially the activities of a most important pressure group, that of labor. There is no doubt that in many export economies the wage structure, especially in the nonagricultural sectors, is so established as to have some relation to the cost of living, this latter being some composite of agricultural, industrial, and import prices. The inflation in all cases has some effect on the prices which go to make the cost-of-living "bundle," the resultant rises in the cost of living stimulate demand by urban labor for compensating wage increases, and the familiar wage-price spiral develops. Thus, even though the inflationary shocks from the balance of payments sector are dampened through the ordinary multiplier process, the spiral is the one factor tending to create or keep the time path of prices rising. Hence we see in the export economy the coincidence of an active balance of payments and boom conditions, thus doubly accentuating inflationary difficulties. External shocks are quickly translated into internal instability.

Once the process of inflation is under way, another factor appears which reinforces the upward movement of prices. This is the psychological factor, hoarding. As the public becomes convinced that prices will continue to rise in the future, over-buying and stocking of consumer goods will provide additional spurts to the price level rise.

In contrast, a market economy such as the United States, in which cyclical forces are generated primarily in the domestic sector, does not exhibit the conflict between internal and external stability to anywhere near the same extent. The inflationary shock generally arises from increases in net private investment or in the government deficit which in turn stimulates national income to rise through the normal multiplier process. If the economy is at the bottleneck stage, general prices also rise. But the rise in national income is associated with a rise in imports thus contributing to a passive balance of payments. Typically, therefore, the balance of payments in the developed economy is passive in boom periods and active in the downswing, the one helping to neutralize the other.

We have assumed up to now that in the export economy no attempt is made to protect domestic stability in the face of external pressures. But efforts made to counter the unstabilizing forces tend invariably either to aggravate the effects of the initial shock or to postpone the international adjustments leading to an equilibrium.[13] For example, the logical counter-step to an inflationary exogenous

[13] Under the regimen of stable exchange rates, equilibrium would ultimately be reached through "classical" price-cost adjustments and "Keynesian" income adjustments, though in any case not without erratic, though temporary, fluctuations in income, employment, and prices.

shock would be combined fiscal-monetary restraints to neutralize the increase in incomes and money supply and to prevent prices from rising. But this procedure would be a barrier to a rise in imports and thus would prolong the process of attaining equilibrium in the balance of payments. The conflict persists in either case.

The significance of this phenomenon is that the process of inflation has its roots not within the economy but without. This has been aggravated in the past by the practice which many exporting countries followed by playing the "rules of the game." When gold flowed in following a balance of trade surplus, the economy resorted to expansionary activities, such as lowering bank rate and making credit easier, the belief being that these speeded up the necessary price-cost adjustments before a return to equilibrium in the balance of payments could be attained. In times of gold outflow, various contractionary policies were followed. Such domestic amplification of the primary impact of gold flows was practiced extensively in the past, especially by the Latin American republics, with disastrous consequences in the form of inflationary and deflationary spirals. Today the pendulum has swung in the opposite direction, with the imposition of credit and trade restrictions and utilization of various forms of neutralization measures designed to lessen the impact of externally-caused fluctuations, though with mixed results.

V. *The Relationship of the Major Trading Partner with the Under-Developed Export Economy*

Since the cyclical process in an under-developed export economy is induced from abroad, we should expect, on theoretical grounds, that the time shape of its cycles should roughly correspond (with an appropriate lag) to those in the economy of its principal trading partner. This we find to be true in all instances in which the traded commodities show some degree of income or price elasticity in the economy of the major trading partner. When this is the case, the peaks and troughs of the business cycle are correlated in the trading countries, and one can almost predict economic events in the export economy by studying the relevant phenomena in the economy of the trading partner.

The inflationary process might be somewhat as follows. A rise in domestic investment or net government expenditures in the economy of the trading partner generates a rise in national income, which in turn induces a rise in imports, some of which are from the export economy under discussion. Assuming that this under-developed area is at the bottleneck level of employment, the rise in foreign demand will contribute to a balance of payments surplus, this initial shock generating the familiar rise in domestic income, inducing secondary spending and causing the level of prices to rise. Wage costs geared to the cost of living tend to follow closely, and industrial prices, being cost-determined, follow the wage increases. Since agricultural supplies for domestic consumption are relatively fixed, some demand spills over into this sector, causing rises in agricultural prices. All the ingredients for an inflationary upswing are present.

The nature of capital flows in international trade is such as to reinforce the unstabilizing influences of flows on current account. When the trading partner is

enjoying rising incomes and prosperous conditions in general, there is normally a "surplus" of capital created which is available for foreign investment, and capital tends to flow into the under-developed areas at the same time as boom conditions are starting in the latter as a result of increased exports. This tends to aggravate the inflationary tendencies already present.

Those in the under-developed areas with capital to invest also help to accentuate cyclical movements in either direction. In times of domestic prosperity capital tends to be repatriated and invested in domestic securities, real estate, and other ventures, thus adding speculative fuel to the inflation fire. Conversely, in bad times the under-developed economies are subject to capital flight, at times of extreme proportions.

In the face of these strong external and internal pressures the country is generally unable or unwilling fully to cope with a strong inflationary movement. As long as the major economic influences originate abroad, it is no surprise that internal disequilibrium should be the common rule. Indeed, as was pointed out above, the economies in question are as likely as not to pursue domestic policies which aggravate rather than alleviate externally-caused difficulties.

VI. *The Impact of Changes in Domestic and International Liquidity on the Inflationary Process*

Effects of the initial impact of an improvement in the balance of payments were discussed above. But the importance of the external sector is further heightened by the impact of export surpluses on the level of international reserves (gold and foreign exchange) in the economy. The influx of foreign exchange increases international liquidity and, through the credit multiplier, domestic liquidity, thus increasing the supply and availability of credit and (usually) lowering its cost.

This fact is significant for there seems to be little doubt that investment and consumption expenditures in the export economies are influenced much more by the size and structure of liquid assets in the hands of individuals than is the case in the United States. Saving propensities in these economies are customarily very low (hence capital formation is retarded) while at the same time liquidity preference is practically negligible for reasons mentioned earlier in this paper. Under these circumstances, increases in cash holdings, being primarily transactions demands, are characterized by a high rate of turnover. Hence there is a very close and direct relationship between money supply changes, and income and price changes. Quantity Theory *is* a good approximation in inflation analysis for export economies.

It appears to be clearly meaningful, also, to speak of an investment function in the form of a positive relationship between investment expenditure and some liquidity indicator (e.g., a liquid asset/debt ratio) which reinforces the familiar autonomous and induced investment of Keynesian analysis. The structure of the investment sector of the export economy might look something like this:

$$I_T = I_1 + I_2 + I_3$$
$$I_1 = \overline{I_1} \text{ (exogenous)}$$

$$I_2 = I_2 (Y_{t-1} - Y_{t-2})$$
$$I_3 = I_3 (L_t - L_{t-1})$$

where I_T is total investment, I_1 is the autonomous investment component, I_2 is induced investment, I_3 is the investment component related to the liquidity index L, and Y is national income. In functional terms, we have here a case of a "compound accelerator," in which investment depends not only on past income changes but on changes in the size or structure of liquid assets. The implications of this for inflation analysis lie in the fact that even though the values of the marginal propensity to consume and of the accelerator coefficient are low, the time path of money and prices can be explosive if the liquidity coefficient is substantial. This appears to be a reasonable interpretation for the under-developed area.[14]

Another feature of the under-developed areas likewise tends to magnify the secondary (liquidity) contributions to the inflationary spiral. This is the absence of adequate financial institutions to mobilize the savings of the community and to provide capital for the various domestic undertakings. Two consequences follow from this: voluntary collection of individual savings is deficient for the needs of the economy, this factor directly contributing to inflation by reducing a traditional form of leakage from the income stream; and "essential" governmental and private capital ventures must be financed at the central bank credit window, thus feeding the inflation through monetary expansion.[15]

Speculative elements in the society constitute a tertiary source of inflationary stimuli. A substantial proportion of the sparse savings that do exist, rather than being channeled into investments which result in increases in physical plant, equipment, or housing, are diverted into the market for second-hand assets and help to bid up their prices. Speculative activity in general is on the rise in periods of prosperity, and this is a contributory factor in the inflation process. Monetary restraints to curb a boom thus appear to have much more validity than they do in an economy such as the United States.

VII. *The Terms of Trade and Inflation*

Quantum indices of imports and exports represent a major concern of the export economy, but are not the exclusive concern. Of equal importance are the relative prices of imports and exports, which comprise the terms of trade. Improvements or deteriorations in the terms of trade can mean the initiation of prosperity or depression, even though the volume of trade remains unchanged. In this paper we are especially concerned with the effect of changes in the terms of trade on the inflationary mechanism in the under-developed area.

One contrast has been especially prominent with regard to the relative economic position of the primary-producing countries after World War I and World

[14] R. N. McKean, in his article entitled "Wartime Monetary Events and Monetary Theory," in the *Papers and Proceedings of the American Economic Association*, May, 1952, pp. 124–133, points out that much more emphasis could be given to this investment-liquidity relationship in developed countries as well.

[15] David Felix, "Investment and Inflation in Underdeveloped Areas," *Proceedings of the Western Economic Association*, 1952, pp. 67–71.

War II. Following the first war, the terms of trade for these economies (especially in agricultural goods) suffered a severe deterioration with respect to the industrialized areas, whereas after the second conflict these same areas have enjoyed favorable and rising terms of trade. The latter has, of course, been the result of world-wide shortages of food and raw materials. This has meant that the appreciation of prices of goods which the under-developed countries import—capital goods primarily—has been substantially less than the appreciation of prices of the primary commodities which these economies export.[16] The consequence has been a substantial rise in the income of exporters and the acquisition of sizable hoards of foreign exchange by the export economies. We shall argue that the effect of this, in general, has been to provide an additional powerful stimulus to inflation in these economies.

It is important to note again that the typical export economy here under consideration is too small to influence world demand or output perceptibly. The terms of trade are determined exogenously, and hence any inflationary stimuli from this sector are generated abroad. No conscious effort by these economies with respect to output or price determination in an attempt to counteract these external pressures can have any effect on the terms of trade.[17]

The inflationary impact of an improvement in the terms of trade is first felt in the export sector. A rise in the unit value of exports has the same effect on exporters' incomes as an increase in quantity demanded would have, and this in turn provides a rise in aggregate demand which tends in the normal course of trade to spill over into the internal sectors of the economy. The various inflationary "mechanisms" in the economy, such as the income multiplier, the credit multiplier, and the wage-price spiral, come into play in a similar manner to what they would in the event of an increase in net private investment or in government deficit spending. But there is good reason to believe that an improvement in the terms of trade, which contributes to internal inflation, eventually provides a self-corrective, because internal inflation may result in currency depreciation or devaluation which tend to worsen the terms of trade. The British experiences of the post-war period illustrate this latter development. If this process occurs with sufficient rapidity, the inflation will counteract the improvement in the terms of trade.

This is the "general case" of the relationship between terms of trade and price level changes. But a "special case" is conceivable, in which a deterioration in the terms of trade might have inflationary consequences. Let us assume that a large proportion of imports into an under-developed economy is essential foodstuffs (this is typical of many Far Eastern countries, which import large quantities of

[16] United Nations, *Relative Prices of Exports and Imports of Under-Developed Countries*, 1949, 156 pp.

[17] Note that official changes in the exchange rate have been precluded up to now by our assumption of stable exchange rates. On the other hand, multiple exchange rates, in Chile or Argentina for instance, may be used in lieu of export taxes to prevent a deterioration of export prices where a country's output constitutes a significant portion of world supplies.

rice and other staples), and that these imports are major items in the cost of living "basket" for the bulk of the working population. Under these circumstances, a worsening of the terms of trade would raise the unit value of imports and hence the cost of living of the wage-earners. The latter situation, assuming the workers have some bargaining power or State support, leads to pressures to raise money wages to maintain the customary standard of living and—if the wage increases are granted—results in general price increases under a system of constant mark-ups (whereby entrepreneurs wish to maintain their proportionate share of income).

Which effect changes in the terms of trade will have in any given instance must depend on the economic conditions at the time of change and on the basic structural features of the export economy, *viz.*, the type and proportion of products imported (essential or otherwise), the importance of imports as cost of living items, the strength of labor, etc. In an economy such as Guatemala's, in which the income of exporters looms large in its influence on economic activity as a whole, and where imports are essentially luxury items, the net inflationary impact is from a favorable turn in the terms of trade. In an economy like Japan's, on the other hand, in which large amounts of essential foodstuffs and raw materials are imported, an adverse swing in the terms of trade might induce strong demands by labor for higher money wages, and this might generate an inflationary wage-price spiral.[18]

VIII. *Income Redistribution Effects*

The under-developed country is typified in almost all instances by a highly unequal distribution of income and wealth. Agricultural and industrial workers live at or only a trifle above the level of bare subsistence and save little or nothing, while the vast proportion of wealth resides with the large landowners, the political ruling groups (usually recruited from the landowning group), and those directly engaged in the export trade. The bulk of the principal leakages from the income stream, *viz.*, savings and imports, are located at these upper income levels. It would appear, at first glance, that the inflationary process would be subject to a dampening from this unequal distribution of income, but substantial exceptions can be found to counter this thesis.

We know that the wealthier citizens of the under-developed economies traditionally manifest interest in real estate, inventories, and foreign securities at the expense of such domestic assets of higher "social priority" as internal industrial and agricultural improvements. Inflation provides an apparent implementation to these customary desires by increasing the yields in these lines of investment and by shifting the income distribution in favor of the wealthy. Keynesian doctrine tells us that inflation heightens the inequality of income distributions, because increases in wages lag behind increases in profits. Thus, if labor makes

[18] Since Japan imports raw materials like petroleum and iron for processing into goods for both domestic consumption and export, increases in relative prices of imports mean increases in material costs, and hence manufacturers would pass these on in the form of higher product prices, reinforcing the wage-price spiral.

no attempt to pressure for increases in money wages during an inflationary period, it must necessarily suffer a decline in real wages, the differential, of course, accruing to profits. Given the lower marginal propensity to consume of the upper income groups, in addition to their proclivity to invest abroad, this growing income inequality would be net dis-inflationary. Some compensatory offsetting to this effect would occur to the extent that these same groups use some of their savings to indulge in the bidding up of prices of "second-hand" assets and securities. In all those export economies in which labor unions are either weak or non-existent, the Keynesian explanation using the standard multiplier analysis will be applicable.

But in those economies in which labor organizations have bargaining strength or where (as is becoming increasingly the case in the under-developed areas) the government acts on behalf of labor to preserve a constant relationship between money wages and cost of living, the Keynesian case may not hold. Instead, there will be a "struggle for shares of national output" as inflation continues, and the result will be the familiar wage-profit-price spiral, which may result in an explosive rise in prices even though effective (real) demand remains constant. This is the "cost-push" inflation which Holzman has analyzed under the designation, "redistribution-of-income effect."[19] Thus, profits are no longer the stabilizing elements they are in the Keynesian analysis. In more cases than not the redistribution of income effect will be a substantial source of de-stabilization in the export economy in times of inflation.

[19] F. D. Holzman, "Income Determination in Open Inflation," *Review of Economic Statistics*, 1950, pp. 150–158.

DEFICITS, SURPLUSES, AND NATIONAL INCOME

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The purpose of this paper is to examine the efficacy of the familiar fiscal prescription which advises the fiscal authorities to run a deficit if they wish to raise income, a surplus if they wish to lower it, and a balanced budget if they wish to maintain it at current levels.[1] The prescription, of course, is based on the conviction that government deficits are income-expanding (if they are financed properly and do not shatter the confidence of the business world), government surpluses income-contracting, and balanced budgets income-neutral. The advocacy of the prescription is apparently widespread.[2]

Actually, however, a part of this fiscal prescription has been under attack for almost a decade now. It has been pointed out that, under most circumstances, if both government expenditures and receipts are raised from one balanced budget level to another, national income will rise; and, if they are lowered, national income will fall.[3] Under most conditions, therefore, it follows that given the private

[1] The paper deals only with the pure income effects of government budgets. It does not treat the monetary, psychological, timing, and other aspects of fiscal policy. These aspects are quite important, but it is the contention of the paper that there are enough confusions concerning the income effects of fiscal policy to warrant their separate treatment.

[2] It is unwise to be dogmatic about this, but I do not feel that I am creating a straw man. The prescription does appear, in one form or another, in many recent publications. It is stated in the boldest manner in the *Reports* of the so-called Douglas and Patman subcommittees. See *Report of the Subcommittee on Monetary, Credit, and Fiscal Policies of the Joint Committee on the Economic Report* (Washington: U. S. Government Printing Office, 1950), pp. 11–12, and *Report of the Subcommittee on General Credit Control and Debt Management of the Joint Committee on the Economic Report* (Washington: U. S. Government Printing Office, 1952), p. 31. Professor Lerner states that the principles of functional finance lead to the prescription. *Economics of Employment* (New York: McGraw-Hill, 1951), pp. 271, 275. Another apparent advocate is Professor E. V. Clemence in his *Income Analysis* (Cambridge: Addison-Wesley Press, 1951), pp. 144–49. Also, see Woodlief Thomas, "Recent Experience with Monetary-Fiscal Measures to Combat Inflation," *American Economic Review, Papers and Proceedings*, May 1952, p. 277, and Roland I. Robinson, "Monetary Aspects of Fiscal Policy," in *Fiscal Policies and the American Economy* (New York: Prentice-Hall, 1951), p. 68. In addition, Philip E. Taylor, *The Economics of Public Finance* (New York: Macmillan Co., 1948), p. 104. The advocacy of the prescription is more implicit than explicit in Professor Samuelson's fiscal-policy chapter of his popular text, *Economics* (New York: McGraw-Hill, 1951), pp. 304–426. While it is not precisely the prescription, the paper also takes issue with the following view: "Adjusting the size of the deficit or surplus is the core of compensatory finance. If there is a need for checking inflation, the deficit should be reduced or the surplus be raised; if there is a need for checking deflation, the surplus should be reduced or the deficit be increased." R. A. Musgrave, "Fiscal Policy in Prosperity and Depression," *American Economic Review, Papers and Proceedings*, May 1948, p. 383. Finally, I can only add that I have found the prescription in dozens of other places.

[3] A bibliography of articles on the multiplier effects of a balanced budget may be found in *Readings in Monetary Theory* (New York: Blakiston Co., 1951), pp. 480–82. There will

propensities to spend there is only one balanced budget associated with any given level of national income. If the budget is balanced at a higher level it will yield a higher income level. If it is balanced at a lower level it will yield a lower income level. Consequently, if the aim of the fiscal authorities is to maintain some given income level, how helpful is it to advise them to run a balanced budget? The advice would appear to be highly inadequate in view of the fact that the level of the balanced budget is unspecified. There is only one balanced budget out of an infinite number that would do the trick. From the standpoint of some desired level of national income, there are many balanced budgets of the government that are income-expanding, many that are income-contracting, and only one that is income-neutral.[4]

As a result of these considerations, there is some awareness among economists that the usefulness of the fiscal prescription has been substantially weakened. But it has not been generally recognized that the balanced-budget qualification has actually struck at the very heart of the fiscal prescription, so that what was once very much alive is now, in fact, almost dead. It is my intention, in the first portions of this paper, to show why this is so. The final portion is an attempt at resurrection, although I do not believe that such a thing can ever be wholly successful. Nevertheless, the attempt is made because there is always an outside chance that an old friend, as the fiscal prescription certainly is, may be saved.

I

An old friend is practically dead because the balanced-budget qualification also applies to government deficits and surpluses. Given the private propensities to spend and an original level of national income, consider some government deficit that will be income-expanding (i.e., that will yield an income level higher than the original one). Now if from this position both government expenditures and receipts are lowered by the same (absolute) amount, leaving the same (absolute) difference between expenditures and receipts, the resulting national income level will be somewhat lower—somewhat closer to the original one. If government expenditures and receipts are lowered sufficiently, the original income level will be regained. And if they are lowered still further, the resulting income level will be lower than the original one. Therefore, from the standpoint of some original income level, a government deficit of a given dollar amount may be income-expanding, income-contracting, or income-neutral. It all depends on the level at which the deficit is run.

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ordinarily be a net expansionary effect if both government expenditures and tax receipts are raised by equal amounts. This is because government expenditures increase by the full amount of the tax receipts while private expenditures will ordinarily decline by less than the tax receipts. The argument is similar in the case of contraction.

[4] This suggests that it is theoretically possible to have an income-stabilizing fiscal program with a constantly balanced budget. The level of the balanced budget would be raised as the private propensity to spend fell, and would be lowered as the private propensity to spend rose. For an excellent discussion of this, see W. J. Baumol and L. V. Chandler, *Economic Processes and Policies* (New York: Harper & Brothers, 1954), pp. 360-62.

The same reasoning applies to government surpluses. Given the private propensities and an original income level, consider some government surplus that will be income-contracting (i.e., that will yield an income level lower than the original one). Now if both government expenditures and receipts are raised by the same amount, the resulting income level will be somewhat higher. If government expenditures and receipts are raised sufficiently, the original income level will be regained. And if they are raised still further, the resulting income level will be higher than the original one. Therefore, from the standpoint of some original income level, a government surplus of a given dollar amount may be income-expanding, income-contracting, or income-neutral. Again, it depends on the level at which the surplus is run.

Thus the entire fiscal prescription—not only that part of it pertaining to balanced budgets—appears to be inadequate. If the fiscal aim is to raise income, the prescription calls for a deficit. But many deficits will lower income. On the other hand, there are many surpluses and balanced budgets that will achieve such an aim. If the fiscal goal is to lower income, the prescription states that a surplus is needed. But many surpluses will raise income, and many deficits and balanced budgets will attain the goal. The prescription is silent on two crucial points: the *size* of the surplus or deficit and the *level* at which it is to be run. The gist of the matter is that if the balanced-budget qualification holds, as many economists aver, then it applies to surpluses and deficits as well as to balanced budgets. And such application, at least from a theoretical viewpoint, virtually destroys the usefulness of the fiscal prescription.

II

These remarks may now be put in more precise form. Assume that there are two sectors, the private, composed of households and business firms, and the government. The private sector purchases consumption goods and services and net investment goods out of its disposable private income. The latter is defined as the sum of disposable personal income and net business saving. At each level of disposable private income there is some planned level of private expenditures on consumption and investment goods.[5] The function which relates the latter to the former is the propensity to spend of the private sector. The government sector purchases final goods and services out of its tax receipts.[6]

These relationships are shown in diagram 1.[7] Disposable private income is measured along the lower horizontal axis from O to R, while national income is shown along the left vertical axis from O to N. The curve, CI, is the private sector's propensity to spend on consumption and investment out of disposable

[5] The analysis throughout the paper is that of a closed economy; that is, the foreign sector is omitted. This omission makes the analysis less cumbersome, but it in no essential way affects the conclusions of the paper.

[6] Government transfer payments will be ignored.

[7] A more detailed use of this diagram may be found in my article, "Fiscal Policies for Full Employment: A Diagrammatic Analysis," *Journal of Political Economy*, LX (December 1952), pp. 525-33.

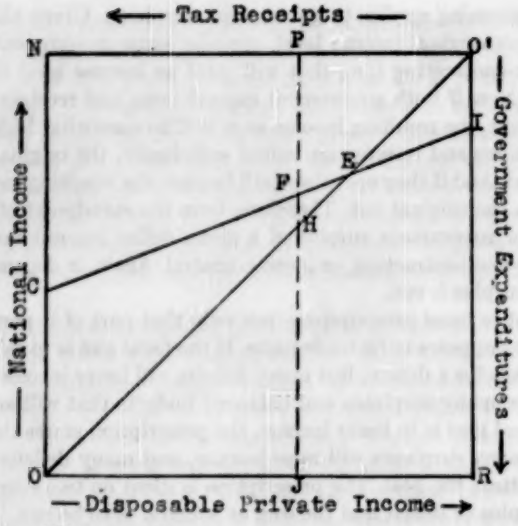

Diagram 1

private income. Government expenditures are recorded on the right vertical axis from O' to R, and tax receipts on the top horizontal axis from O' to N.

Any point within the square, *viewed from the O' origin*, shows a government budget; that is, a relationship between government expenditures and tax receipts. If this point is above the 45° line, OO', it reflects a government surplus; if it is below this line, a government deficit; and, if on the line, a balanced budget.

Any government budget shown by a point on the CI curve is income-neutral, in the sense that it will maintain national income at the ON level. Consider the government budget at F. Out of a disposable private income of OJ, the private sector spends JF for consumption and investment. These expenditures along with FP government expenditures yield a national income level of JP, equal to ON and to $O'N$. From this national income level, the government collects $O'P$, equal to RJ, in taxes, leaving OJ disposable income to the private sector. The process will then be repeated, given the propensity to spend of the private sector and the government budget at F. It will be noticed that the planned deficit of the private sector is equal to the surplus of the government, both shown by HF.

In the same way it can be shown that any other government budget represented by a point on the CI curve, such as C, E, or I, will maintain national income at the ON level.[8] This is because in equilibrium the government's planned deficit

[8] This statement, particularly the reference to point C, takes no account of possible adverse effects of taxation on work incentives. With a budget at C, the government would be spending CN and at the same time taxing away the entire disposable income of the private sector. Under these circumstances there is no doubt that national income could not be maintained at the ON level for very long. But there is some point, perhaps between C and F, that would represent the maximum ratio of tax receipts to disposable income

(surplus) must be equal to the private sector's planned surplus (deficit). The latter is shown by the vertical distance between the 45° line and the *CI* curve. Therefore, the government's budget must be on the *CI* curve to fulfill the equilibrium condition. But all government budgets on the *CI* curve lying between *C* and *E* are surpluses, all lying between *E* and *I* are deficits, and *E* is a balanced budget. Therefore, national income may be maintained at the *ON* level with any number of surpluses and deficits or with one balanced budget. That is, any of these budgets is income-neutral.

Which government budgets will increase national income beyond the *ON* level? The answer is any budget represented by a point *below* the *CI* curve. Consider the balanced budget at *H*. Since this represents the same tax receipts but larger government expenditures than budget *F*, and since the latter is income-neutral, the *H*-budget must be income-expanding.[9] In the same way, any other government budget shown by a point below the *CI* curve is income-expanding because total expenditures, private and government, will exceed the *ON* income level. But note again that this may be a deficit, a surplus, or a balanced budget.

It should now be clear that any government budget represented by a point *above* the *CI* curve will decrease national income below the *ON* level.[10] This is because total expenditures will fall short of the *ON* level. Again, a surplus, a deficit, or a balanced budget may have this effect.

These relationships are summarized in diagram 2. All surplus budgets of the government, *S*, lie above the 45° line, all deficits, *D* below this line, and all balanced budgets, *B*, on this line. All income-contracting budgets, *c*, lie above the *CI* curve, all income-expanding budgets, *e*, lie below this curve, and all income-neutral budgets, *n*, lie on the curve. Thus the deficit budgets of the government that are income-contracting are shown in the area labeled *Dc*. The balanced budgets that are income-expanding are shown on that part of the 45° line labeled *Be*, and so on. There is one government budget that lies on both the 45° line and the *CI* curve, that budget being balanced and income-neutral, *Bn*.

Referring back to the fiscal prescription, suppose that national income is at the *ON* level, as in diagram 2, and that it is desired to raise this income level by means of fiscal policy. The prescription specifies a deficit. But a deficit run within the

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consistent with the maintenance of the *ON* income level. Therefore, taking account of work incentives, the statement in the text would refer to a somewhat shorter *CI* curve, one which starts, perhaps, just to the left of *F*. Similar statements to follow should be interpreted in this way.

[9] That is, total planned expenditures are *JF* plus *HP*, and these exceed the national income level of *ON*. The planned deficit of the private sector is *HF* and the planned surplus of the government is zero. The planned deficit of the private sector will not be realized since its disposable income will be *OJ* plus *HF*. Thus the private sector will have a realized balanced budget along with the government.

[10] Consider point *P* as the government's surplus budget. The private sector spends *JF* out of an *OJ* disposable income, but since the government spends nothing total expenditures fall short of the national income level of *ON*. The government surplus is *PH* and the planned deficit of the private sector is *HF*, so that income falls initially by *FP*. At the end of the period the private sector has actually run a deficit of *HF*, equal to the government's surplus.

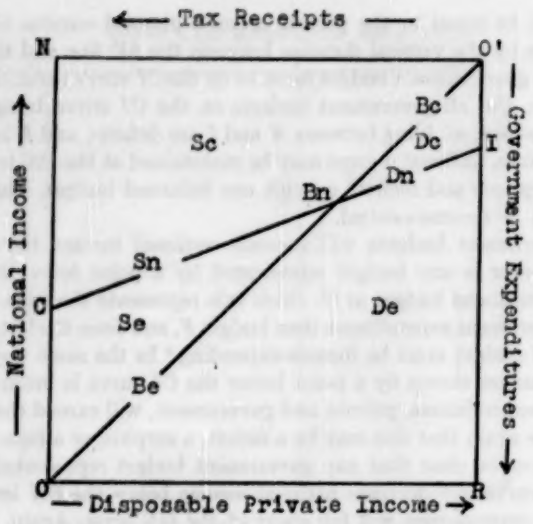

Diagram 2

Dc area would in fact decrease national income, and a deficit run on the *Dn* portion of the *CI* curve would just maintain this income. Only deficits run within the *Dc* area would bring about the desired result. But the fiscal prescription, in and of itself, fails to guide the authorities to this latter area.

If the fiscal authorities desire to decrease national income, the prescription calls for a surplus. However, the surpluses within the *Se* area are income-expanding, and those on the *Sn* portion of the *CI* curve are income-neutral. Only those surpluses within the *Sc* area would do the trick. And again the prescription fails to guide the authorities to this area.

The reason may be easily supplied as to why it would be inadequate simply to recommend a balanced budget if the fiscal objective were to maintain national income at the *ON* level. There is in fact only one balanced budget from an infinite number that would achieve such an objective. All the others would fail, since all the others are either income-expanding or income-contracting.

III

These results are not unconventional. They are, after all, essentially the same as those flowing from the current saving-investment analysis. In setting forth the equilibrium condition in an economy composed only of households and business firms, it is said that planned investment must equal planned saving. If the former exceeds the latter, national income will rise; and, in the opposite case, national income will fall. This may be stated in terms of deficits and surpluses by noting that investment minus business saving represents the deficit of the business sector, and personal saving the surplus of households. In equilibrium, the planned deficit is equal to the planned surplus. Income rises if the former exceeds the latter, and falls in the opposite case.

Notice that income may rise, fall, or remain constant even though the business sector continues to have a planned deficit. And the same is true even though the households continue to have a planned surplus. Therefore, if the aim is to raise national income, it would not do simply to recommend that some sector run a deficit. And if the aim is to lower national income, it would be inadequate to advise some sector to run a surplus. For it is the relationship between the two planned budgets that counts—not merely the fact that one sector has a planned deficit, or that the other has a planned surplus.

Now the analysis is obviously not affected by the names attached to the two sectors. One may be called the government sector and the other the private sector. In equilibrium, the government's planned deficit (surplus) is equal to the private sector's planned surplus (deficit). If the planned deficit exceeds the planned surplus, national income rises; in the opposite case, it falls. Therefore, a government deficit may be income-expanding, income-contracting, or income-neutral. The same is true for a surplus and a balanced budget.

This is certainly conventional analysis, but there is no doubt that it runs counter to the analysis underlying the fiscal prescription. This prescription purports to be able to determine whether national income will rise or fall solely on the basis of the relationship between one sector's (the government's) expenditures and receipts. This is equivalent to arguing that, in the household-business economy, one need only look at planned investment to determine future movements in national income—that one can safely neglect planned saving. No one to my knowledge has ever subscribed to this, which makes the general endorsement of the fiscal prescription all the more perplexing, at least from the theoretical viewpoint.

IV

Nevertheless, it is possible to devise a theoretical framework within which the fiscal prescription is valid. The method is to assume that the private sector at all times plans to spend its entire disposable income regardless of the level of that income. In such a case the *CI* curve would be identical with the 45° line, as shown in diagram 3. All surplus budgets of the government are now income-contracting, all deficits income-expanding, and all balanced budgets income-neutral. The reason for this is that the private sector always has a planned balanced budget, so that a government deficit causes the planned deficit to exceed the planned surplus (equals zero), a government surplus causes the planned surplus to exceed the planned deficit (equals zero), and a government balanced budget brings about the equality of the planned deficit and surplus, each being equal to zero. The prescription works.

But this is surely a special case. If it is the one that the proponents of the prescription have in mind, then all that can be said is that, while their policy recommendations follow from their assumptions, the latter appear to be quite unrealistic and, one may add, quite unmentioned. In fact, for those who have used the balanced-budget qualification, it is perfectly clear that it is not this special case that has been employed to support the validity of the fiscal prescription. For in this special case the movement by the government to higher

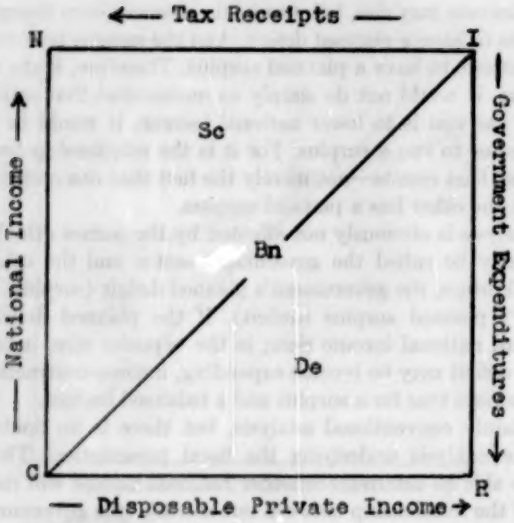

Diagram 3

or lower balanced budgets will have no effect on the level of national income; the multiplier effects of balanced budgets are absent. At any rate, there is no evidence that the special case has ever been relied upon to support the prescription's validity.

A second approach that may be used to save the substance of the prescription is suggested by the above. This is to assume that the *CI* curve intersects the 45° line and is almost as steep as, or just a bit steeper than, the latter. Under this assumption there still remain the income-contracting deficits and the income-expanding surpluses, but these deficits and surpluses are now quite small in size. The prescription would work with one minor amendment. If the aim is to increase income, a *fairly large* deficit should be specified; and a *fairly large* surplus, if the aim is to decrease income. With the *CI* curve in the position assumed, a fairly large deficit is almost certain to be income-expanding, and a fairly large surplus is almost certain to be income-contracting. Moreover, while there is still only one balanced budget yielding the *ON* level of income, most balanced budgets will yield income levels approximating *ON*. The relevance of this approach, however, depends upon the realism of the assumption concerning the slope and position of the *CI* curve.

A third approach, and perhaps the most promising one, incorporates economic theory with political possibilities. It could be argued that from a political standpoint the authorities are almost certain to run deficits that are income-expanding and surpluses that are income-contracting—regardless of the slope of the *CI* curve. Suppose that the fiscal authorities are confined to the rectangular area shown within diagram 4, in the sense that it is politically impossible for them to run a budget that lies outside of this area. There are definite political limits,

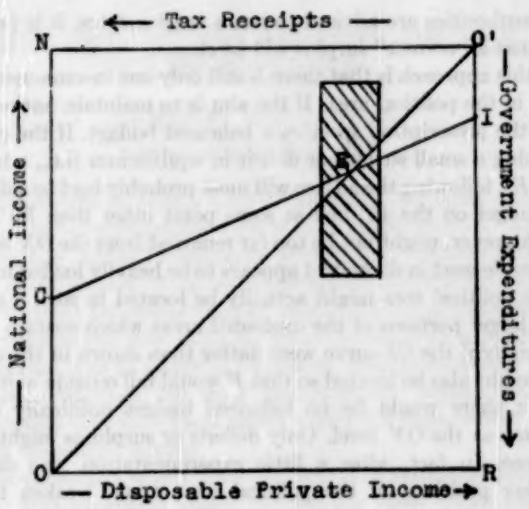

Diagram 4

both upper and lower, to expenditures and receipts. However, there is perfect freedom to move to any point within the "political area." Furthermore, suppose that the government's budget is currently balanced, or approximately so, at *E*, or very close to *E* on the *CI* curve. National income is then at the equilibrium level of *ON*.

If now the fiscal goal is to increase national income, the prescription calls for a deficit. But the "wrong" deficits—that is, the income-contracting ones—lie within the area *EO'I*, only a small portion of which lies within the political area. The income-expanding deficits that are politically attainable lie within the lower-shaded portion of the area. Since this portion is so large relative to the unshaded portion, the chances of the authorities choosing an income-expanding deficit are quite good. Besides, it could be argued, the authorities are not likely to reach a deficit by decreasing government expenditures, which they would have to do to reach an income-contracting deficit within the unshaded portion of the area. To clinch matters, the authorities could be told to run not just a deficit but a large deficit. This would surely lead them to an income-expanding deficit.

Similar considerations apply if the aim is to decrease national income below the *ON* level. The prescription calls for a surplus to achieve this goal. For at least two reasons, it could be argued, it is improbable that an income-expanding surplus will be chosen. First, these surpluses lie within the area *EOC*, only a small portion of which lies within the political area. On the other hand, the politically attainable income-contracting surpluses lie within the relatively large upper-shaded portion of the political area. The chances are, therefore, good that one of the latter surpluses will be hit upon. Second, the authorities are much more likely to reach a surplus by decreasing government expenditures than by increasing them—as they would have to do to reach an income-expanding surplus. If, in

addition, the authorities are advised to run a large surplus, it is just that much more certain that a "correct" surplus will be chosen.

A defect of this approach is that there is still only one income-neutral balanced budget (at *E*) in the political area. If the aim is to maintain national income at the *ON* level, the prescription specifies a balanced budget. If the government is currently running a small surplus or deficit in equilibrium (i.e., a budget on the *CI* curve near *E*), following the advice will most probably lead to a disequilibrium situation, a budget on the 45° line at some point other than *E*. The resulting income level, however, might not be too far removed from the *ON* level.

But the example used in diagram 4 appears to be heavily loaded in favor of this approach. The political area might actually be located in such a position as to include much larger portions of the unshaded areas which contain the "wrong" budgets, especially if the *CI* curve were flatter than shown in the diagram. The political area might also be located so that *E* would fall outside of its boundaries, in which event there would be no balanced budget politically attainable to maintain income at the *ON* level. Only deficits or surpluses might be available for this purpose. In fact, after a little experimentation, one discovers that almost all other positions of the political area would weaken the argument considerably.

V

The conclusion, therefore, is that the fiscal prescription is theoretically untenable, except in the special case where the average and marginal propensities to spend are both equal to one—that is, where the *CI* curve is identical with the 45° line. In the usual case, where the *CI* curve crosses the 45° line, either from above or from below, many government deficits are income-contracting and many government surpluses are income-expanding. In addition, there is only one balanced budget that is income-neutral, provided there is a unique intersection point of the *CI* curve and the 45° line. These considerations suggest that the prescription's usefulness as a guide for fiscal action, in the majority of cases, is likely to be extremely limited.

It is true, however, given the intersection of the *CI* curve and the 45° line, that the closer the one lies to the other the greater are the chances that the authorities will choose a "correct" budget. If in addition the "wrong" budget-areas are further reduced in size by the existence of a political area, the chances of appropriate fiscal action are still greater. And these chances would be further improved, if the prescription is amended to refer to large deficits and large surpluses. The prescription's reference to balanced budgets, however, presents a tougher problem. Within this framework a salvaging operation for this part of the prescription appears impossible. Nevertheless, something might be done along these lines to justify the continued use of the prescription. To do this, it would have to be shown that, while "wrong" budgets exist in the majority of cases, the authorities for one reason or another would not be likely to choose any of these budgets. But even if this could be shown, would it amount to much more than a patching-up operation on a basically unsound formula?

THE MACRO AND MICRO ASPECTS OF THE *WEALTH OF NATIONS*

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This article purports to clarify certain contradictions attributed to classical value theory,[1] and to substantiate a claim that Adam Smith's "ambiguous and confused" *Wealth of Nations* constitutes a valid and coherent attempt to integrate theories of the process of the economic system and the pricing of particular commodities. Current interpretations in which Smith's premarginalist formulations appear confused and irreconcilable[2] seem to stem from a failure to recognize that this integration was as important a goal of classical economic theory as it is of contemporary economics, but that classical theory approached the problem from the standpoint that individual prices were a function, rather than a determinant, of the economic system.

Basically the constructs which draw the lines of demarcation between classical economics and post-Ricardian utility analysis are those which touch upon this relationship between the macrocosm and the microcosm. Classical theory, formulated in the age of mechanical law which received its fullest expression in the works of Newton,[3] concerned itself with problems of general equilibrium and looked upon partial analysis as subsidiary to the generic. Micro analysis was the study of the particular and, essentially, an inquiry which took its position within the macroscopic movement of the system as a whole. Post-Richardian utility analysis, on the other hand, has taken the microcosm as its starting point, with the

[1] "It is not easy to give a summary account of Adam Smith's ambiguous and confused theory of value. Subsequent economists have found two or three different strands of thought which Smith did not separate sufficiently clearly. He developed the labor theory inherited from Petty and Cantillon, but he also added to it certain elements of the supply and demand analysis of Locke. And in his struggles with the difficulties of the concept of capital and its place in the economic process, he *contradicted his own labor theory of value and bequeathed to later generations what became a mechanical cost of production theory*. According to their predilections economists have stressed one or the other of these different principles. But not even adherents of the same school can agree on their interpretations of Smith's theory. . . . It is true that Adam Smith's theory is inconsistent." Eric Roll, *A History of Economic Thought* (New York: Prentice-Hall, 1942), pp. 164–165. (Italics added.)

[2] "Smith, *having discarded labour*, finds a new determinant of value in cost of production, and if socialists rallied to his first hypothesis the great majority of economists right up to Jevons have clung to his second. As for Smith himself, *he never had the courage to choose between them*. They remain juxtaposed in the *Wealth of Nations* because *he never made up his mind which to adopt*. As a result his work is full of contradictions which it would be futile to try to reconcile." Gide and Rist, *A History of Economic Doctrines* (New York: D. C. Heath and Co.), p. 78. (Italics added.)

[3] Elie Halevy, *The Growth of Philosophic Radicalism* (New York: Augustus Kelley, 1946), p. 6; J. H. Randall, *The Making of the Modern Mind* (New York: Houghton Mifflin Co., 1940), Book III; F. S. C. Northrop, *The Meeting of East and West* (New York: Macmillan Co., 1946), Chap. III.

individual household and firm at the center of gravity. Claiming that the classical formulation of the relationship between the economic system and the actions of individuals was incorrectly stated, the leaders of the utility school shifted the emphasis to the microcosm as the activating force in the economic system.[4] The generic system of the classicists was pushed to the background and made subordinate to the interaction of microscopic forces.

Present-day theory has, for the most part, accepted this reversal of the major emphasis which classical economics developed. Under the influence of marginal analysis, the basic postulates of the classical school, which were concerned with the economic system as a whole, were cast aside until the advent of the "new economics" of J. M. Keynes. Except for this "modern lapse into mediocrity," economics has come to view classical theory from the bench mark of the utility school in which value is synonymous with price and the economic process is activated by the individual firm and consumer. Böhm-Bawerk, Marshall, and Wicksell each claimed that a new theory of the functioning of the macrocosm, which would allow for historical development and the dynamics of the economic system, would be developed from the basic postulates vis-a-vis the individual consumer and producer.[5] But such a theory, based upon the assumptions of utility analysis, has never seen the light of day. All three authors failed to go beyond micro analysis, and orthodox contemporary thought has not yet made the transition they anticipated.

Therefore, any attempt to interpret the *Wealth of Nations* in the light of orthodox price theory distorts the thinking, not only of Adam Smith but of Ricardo and Marx whose works also reflect the change in outlook upon economic and political phenomena which accompanied the rise and development of capitalism. This article represents an investigation of the *Wealth of Nations* in terms of certain underlying postulates of the classical economists that serve to clarify Smith's basic formulations of value and price.[6]

The first of these is the homogeneity of money, which was assumed by classical economics in the determination of any essential relationships in the system. More recently, this has been referred to as the absence of "money illusion,"[7] and the importance of money is stressed only as a medium of exchange. The assumption

[4] See, for example, T. W. Hutchison, *A Review of Economic Doctrines, 1870–1929* (Oxford: Clarendon Press, 1953).

[5] For the Marshallian formulation of this problem see Allan Gruchy, *Modern Economic Thought* (New York: Prentice Hall, 1947), pp. 37–39.

[6] As Keynes suggests in a footnote, *General Theory*, p. 3, the word "classical" was applied, by Marx, to Ricardo and his predecessors. Marx also considered himself to be a member of the classical school. This meaning of the term, rather than Lord Keynes' "solecism," is used in this article. Excluded are the writings of Malthus and the Physiocrats which reflect the opinions of the agricultural classes and consequently formulate the significant queries in a quite different framework.

[7] J. M. Keynes, in the *General Theory*, breaks the continuity of economic thought vis-a-vis money, and introduces, in some detail, the concept of "money illusion" which had been suggested by R. A. Fisher. Keynes' assumption (Chap. 19) is a throwback to the Mercantilist theory of money. See W. W. Leontief, "The Fundamental Assumption of Mr. Keynes' Monetary Theory of Unemployment," *Quarterly Journal of Economics*, November 1936, pp. 192–197.

views money, as such, as a convenient technique of exchange, either for calculation or as an exchange intermediary, and as having passive influence on the essential productive relationships in the system. Any change in the quantity of money would affect all prices equally, leaving relative prices unaffected; the prices of all things would simply be raised or lowered proportionally, leaving the ratios the same as before.[8] This assumption, with respect to money, formed the basis for most of Smith's attack upon the Mercantilists and their theories of value, and for Ricardo's essays upon the monetary question.[9]

Second is the distinction made between productive and unproductive effort. Classical theory postulated that a consuming class which had no active function to perform in the production of material commodities, was not an active factor in economic society. The existence of such a class, consequently, meant a drain upon the "wealth" of nations and did not aid the productive process. This process, for all classical theorists, was the direct result of labor and the incentive to accumulate capital. That emphasis upon the productive process was the basis for the rent theories of both Smith and Ricardo, and provided the raw material for the political attacks upon speenhamland and the corn laws, and the protection of land rents. "Productive" implied the actual creation of commodities with emphasis upon that labor which contributed to the production of tangible goods. These were the domain of analysis.[10]

Thirdly, the famous law of markets, which has been given the name of J. B. Say, stated that demand, in the aggregate, was a dependent variable. Thus, when looking at the whole system rather than at particular sectors, supply was the determinant of production and price and demand referred only to the distribution of the total product between alternative producers and consumers.

These were the major assumptions in the background of the *Wealth of Nations* and as such they constituted value judgments which were implicit in the analysis. The first assumption reveals the classical concept of what "real" factors are significant in the determination of wealth. The second is the foundation for the labor, or productive, theory of value and, together with the third assumption, forms the basis for the analysis of the economic system as an evolving process. In the process of production was to be found the activating force in history, with capital accumulation as the central theme. Value was the creation of tangible goods, and labor was the source of that value. Viewing the labor theory of value as Smith's theory of the process of production, Book II becomes significant as a history of capitalistic production, and Smith's theory of individual price appears, not as a contradiction, but as the micro aspect of his analysis.

SMITH'S THEORY OF THE ECONOMIC PROCESS

While it is easy enough to claim that mankind should not be interested in the purely material world, it is something again to claim that, historically, men and

[8] M. Dobb, *Political Economy and Capitalism* (New York, 1947), p. 39.

[9] See *Wealth of Nations* (Modern Library Edition) discussion of real and nominal prices, Book I, Chap. V; D. Ricardo, *Collected Works*, ed. by Sraffa and Dobb (New York: Cambridge University Press, 1951), Vol. III, and Vol. I, p. 22.

[10] Ricardo, *Collected Works*, Vol. I, pp. 11–12; *Wealth of Nations*, Book II, *passim*.

women have not been seekers after commodities of a tangible and substantial nature. The spirit may seek the finer things of life, but the body has pragmatically gone about its everyday task of acquiring and producing those material objects upon which it is dependent. For the proper understanding of the 18th century, nothing is so important as the recognition that the age of the early industrial revolution looked upon the production of goods and more goods as the *sine qua non* of activity. The long draught of commodities which had characterized the decline of feudalism had given way to the growing abundance that accompanied industrialization. All classes, regardless of their institutional source of income, looked upon increased production as the ultimate purpose of economic activity. Emphasis upon productivity rapidly replaced the restrictive philosophy of Mercantilism as the fluidity of society required production for all, and not the few.

Smith's *Wealth of Nations*, stressing the productivity of society which would be brought about by the division of labor and competition, was the touchstone of the age. Statements like "The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes, and which consist always either in the immediate product of that labour, or in what is purchased with that produce from other nations,"[11] reflect the dominant attitude which prevailed in 18th century England. As Professor Bladen has suggested, the *Wealth of Nations* can be viewed as "a plea for consumer's sovereignity."[12] The output of commodities was dependent upon (1) the state of technology, and (2) the ratio of productive to unproductive in the allocation of the labor force.[13] The higher the proportion of labor used in productive activity, *ceteris paribus*, the greater the flow of goods in real terms. The state of technology, in turn, depended upon the state of the arts and the advancement of the division of labor which directly increased the productivity of the nation. These were the notions and the method juxtaposed to the mercantilist philosophy which depended upon scarcity for value. The latter was true for the few, the former would increase the welfare of all.

The increased productivity which an advanced and improved division of labor manifests necessitated the development of institutions and mores to facilitate exchange as each individual produced a greater number of specific commodities than could be personally consumed. The surpluses were exchanged in the market and, in this sense, exchange became a system of distribution. The quantity of goods in the distribution process, however, was determined at the time of production, if the latter term is understood in its classical meaning as a process by which commodities are increased by the exertion of human energy. The ratio of the exchange of the surpluses had to do with the conditions surrounding their production, and it was the analysis of these conditions which took the substantial position in theory.

[11] *Wealth of Nations*, p. lvii.

[12] V. W. Bladen, "Adam Smith on Value," *Essays in Honor of E. J. Urwick*, ed. by H. A. Innis (Toronto: University of Toronto Press, 1938), p. 40.

[13] *Wealth of Nations*, p. lvii.

The famous dictum of two kinds of value, value in use which is peculiar to the individual consumer, and exchange value which the market gives to commodities, was the starting point of the analysis. This distinction had its roots in a philosophical concept which has only incidentally been recognized by students of classical economics. Adam Smith was first and foremost a philosopher, and secondly a political economist. He brought to his economic analysis a general philosophical background which certainly influenced his formulation of problems and their solutions. As successor to Francis Hutcheson's position, he represented the "materialist" aspects of 18th century philosophy. That is, he dealt with the objective aspects of economic phenomena which were *common* to the society. While he was a friend of Hume and was familiar with the subjective notions of reality expressed by 18th century skepticism, his economics remained objective in the philosophical meaning of the term.[14]

As a part of the Lockian extension of the Newtonian *Weltanschauung* into the area of political and religious thinking, the 18th century came to recognize a distinction between the "real," material forces of the world (its primary qualities) and those perceived by man through his senses (the secondary qualities).[15] The latter, in as much as they were peculiar to each individual, were specific and nongeneric. They were special to the individual in question. On the other hand, there was the real and objective world which was independent of the sense perceptions of individuals. Part of this material world was the economic system which existed as an entity, unaffected by the individuals who made up society. In the system there was homogeneity of data, while individual datum were heterogeneous and particular. Within the system the analysis of market phenomena dealt with value in exchange, while value in use pertained to the individual consumer. For classical economics, therefore, the real world of analysis was homogeneous and devoid of the distortions of sense perception. The essential distinction between classical theory and the utility approach of the 19th century is that the latter looked microscopically at the economic process and, consequently, value in use became the only significant basis of analysis.

The influence of Immanuel Kant on the subject of the nature of matter must be considered in any attempt to understand the utility school. The Kantian concept that matter is what the mind perceives it to be exerted great influence upon all German-Austrian thinking. Its logical conclusion, that all phenomena are purely personal, makes macroscopic analysis irrelevant since personal perceptions are not additive. This trend of thought is apparent in Austrian economics and is the position taken by those who claim that, "to form social aggregates is an operation with a very limited meaning."[16] However, both the history of science and the present state of science indicate that the systematic organization

[14] Northrop, *op. cit.*, p. 128. For the distinction between materialistic and subjective economics, see L. Robbins, *An Essay on the Nature and Significance of Economic Science* (London: Macmillan Co., 1946), pp. 4–23.

[15] Northrup, *op. cit.*, p. 112 ff; also A. Smith, "Of External Senses," *The Collected Works of Adam Smith, Ll.D.* (ed. by Dugald Stewart), Vol. V., pp. 331–399.

[16] L. Robbins, *op. cit.*, pp. 56–57.

of facts and their conceptual relationships has only been fostered by the elimination of the purely subjective elements in analysis by reductions to nonqualitative formulations.[17] The labor theory of value, with its emphasis upon exchange value and the rejection of utility as the foundation of analysis, appears to be in keeping with this tradition.

Within this framework, Smith turned to investigation of production and exchange.

SYSTEM OF EXCHANGE

To investigate exchange in the system, Smith set up three problems: (1) The determination of the real measure and source of exchange value, (2) the analysis of the component parts of real exchange value, and (3) the understanding of the circumstances which caused some goods to exchange at other than their real value.[18]

Smith sought to define an underlying and absolute value determined by the material forces at work in the economy.[19] He assumed that, through particular circumstances of the market, some commodities might exchange at other than their real prices, but that, independent of market price, there existed an absolute value derived in the process of production.[20] Such a value, materially determined and therefore measurable, would remain unfettered by the use value which individuals might attribute to commodities.[21]

This notion of absolute value was similar to those of just price which were at the base of ecclesiastical value theory. Smith had expressed his general notions of justice toward others in *The Theory of Moral Sentiments*, dealing with contemporary philosophical inquiry into the relationship of the individual to the system. Locke had postulated the right of each individual to formulate his own morals—religious, political, and economic. Granted that premise, the crucial question was whether the macrocosm could be advanced by the egocentric action of individuals. The solution worked out by Shaftesbury was that individuals had a "sympathy" for the rights of others which acted as a restraint upon their selfish interests. His was an aristocratic and esoteric sympathy, residing with the benevolent despot, and was inconsistent with such notions as the

[17] For a discussion of the problem of subjectivism in science, see Marvin Farber, "Experience and Subjectivism," *Philosophy for the Future*, ed. by Sellars *et al.* (New York: Macmillan Co., 1949), pp. 591-632.

[18] *Wealth of Nations*, pp. 28-29.

[19] This is suggested by a rather obscure paper published posthumously under the title, "History of Astronomy and Its Influence upon the Development of Other Sciences," *Collected Works of Adam Smith*, Vol. V. This paper deals with the successes of the Newtonian physics and attributes these to Newton's ability to systematize the body of knowledge. Smith suggests that attempts should be made to extend this procedure into other areas of thinking and to get away from the purely personal and nonmaterial forces at work. As for the significance and importance which Smith attributed to this paper, see J. Rae, *The Life of Adam Smith* (London, 1892). See also Ricardo, *Collected Works*, Vol. IV. "Absolute Value and Exchangeable Value," pp. 358-412.

[20] *Wealth of Nations*, p. 52.

[21] W. R. Scott, *Francis Hutcheson* (Cambridge, 1900), pp. 235-237.

brotherhood of man. Hutcheson democratized the notion and deduced, in *The System of Moral Philosophy*, a universal sympathy which held competition between individuals in check and guaranteed the greatest good to the greatest number.

Aware of this problem and of the disadvantage through exchange possible in a system of competition between ego-motivated individuals, Smith looked upon value in exchange as *originally* synonymous with that involved in production. Labor was, accordingly, the source of this value, and gross national product, in real terms, was the material result of productive labor.[22] Use value he viewed as independent of the conditions of production because it depended upon the ideas and perceptions individuals had about commodities and the estimated satisfaction to be derived from them. In the general philosophical framework of Smith's day, as presented by Hume and before him Locke, ideas and perceptions were the effects of matter reacting upon the mind. They were personal, and were meaningful only relative to particular persons. Therefore, notions of utility were nonadditive, dependent variables from which no common or abstract value could be hypothesized. The independent, objective forces were the economic laws of causation in the philosophical tradition of Shaftesbury, Hutcheson, Locke, and Hume, who had all attributed the source of wealth to labor in production.[23]

The real value of commodities, which could be increased through human effort,[24] was a function of the toil and effort of producing them as, "all of the wealth of the world was originally purchased by labor."[25] But while the creation of all wealth was attributed to labor, it was not assumed that labor received all it produced. It was true in a primitive economy, before the accumulation of stock and the appropriation of land, that "the whole produce of labor belongs" to those who produce it,[26] but this did not remain true in stages in which private ownership of the means of production was characteristic, because the laborer "must share it [produce] with the owner of the stock which employs him . . . [and] give

[22] The estimation of gross national product in real terms was the index problem which Smith attempted to work out in his long discussion as to whether corn or money was a better measure of the real value of goods. The whole classical school tended to ignore the contribution of services as unproductive labor. (Book II, *Wealth of Nations*.) Smith's use of labor, rather than utility, as the measure of real value, somewhat anticipated the problem which Keynes discusses as one of the "Perplexities which most impeded my progress in my writing," the *General Theory* (Chapter 4). It is not a coincidence that both Keynes and the Classical school used labor as the measure of value, for both were concerned with the macrocosm rather than the microcosm.

[23] J. Bonar, *Philosophy and Political Economy in Some of Their Historical Relations* (London, 1893), p. 117; Scott, *op. cit.*, p. 233 and *passim*. With the development of the utility school, value was considered to originate in the process of consumption, rather than production, and labor lost the significant role it had played in the classical analysis. It is suggested that this was essentially due to the orientation of utility analysis to the microcosm rather than the macrocosm.

[24] The classicists recognized of course that some commodities were outside the boundaries of increase through human effort and derived their value mainly by being scarce. Scott, *op. cit.*, p. 238.

[25] *Wealth of Nations*, pp. 30–31.

[26] *Ibid.*, pp. 47, 64.

up to the landlord a portion of what his labour either collects or produces."[27] Consequently, "the whole of what is annually either collected or produced by the labour of every society . . . is in this manner originally distributed among some of its inhabitants."[28]

This left profit and rent as deductions from the produce of labor arising, like value, in the process of production and in the particular institutions which characterized the latter under conditions of private ownership. These institutions were considered strictly in terms of the differential between those who owned the means of production, capital and land, and those who worked to produce. "Many workmen could not subsist a week, few could subsist a month, and scarce any a year without employment," and it seldom happens "that a person who tills the ground has wherewithal to maintain himself til he reaps the harvest. His maintenance is generally advanced to him from the stock of a master, the farmer who employs him, and who would have no interest to employ him, unless he was to share in the produce of his labour, or unless his stock was to be replaced to him with a profit."[29]

Thus, in Smith's general equilibrium or macro analysis, profits and rents, in the aggregate, were explained as deductions from the produce of labor, not as arising in the process of distribution as suggested by later economists. The distinction can be seen by comparing Smith's discussion with that of any member of the utility school. Schumpeter, for example, explains entrepreneurial revenue in terms of innovation.[30] Speaking microscopically, it is certainly possible to hypothesize profit as the return, above costs, to the individual entrepreneur. But in the aggregate, if innovation is to yield income over and above the wages involved in its production, there must be a group of workers who are in need of working for less than the value they produce. The difference, profit, was by far the most important variable in all of the classical thinking. It provided the motive behind capital accumulation that was considered to be the major kinetic force in the system of capitalist production.[31]

This classical formulation in which profit was assumed to originate in the differences between the economic status of the laboring and the nonlaboring classes did not exclude the possibility that individual profit could arise in exchange. Such cases, however, were special because, in the competition between markets, individuals and resources would be mobile and prices flexible. The advantages and disadvantages which some would experience in the short run would be eliminated through the forces of the market and commodities would tend, in the long run, to their real exchange values.[32]

[27] *Ibid.*, p. 49.
[28] *Ibid.*, p. 52.
[29] *Ibid.*, pp. 65–66.
[30] *The Theory of Economic Development* (Cambridge: Harvard University Press, 1949), Chapter IV.
[31] See L. Robbins, "On a Certain Ambiguity in the Conception of Stationary Equilibrium," *Economic Journal*, 1930, pp. 194–214.
[32] Dobb, *op. cit.*, pp. 38–39. Ricardo considered this to be such a minor aspect of the analysis that he ignores the short run problem altogether and concerns himself

It might be suggested here that for the terms long run and short run, with their time connotations, it is useful to substitute macro and micro to point up the difference between profit in the aggregate, and profit on the individual level. Viewing the classical concept of the origin of profit in its rightful place in the general equilibrium analysis, the notion of no profit in the long run is nonsense. For Smith, profit did not arise as the result of exchange, but existed in the sense of the difference between output produced by labor and the total wage bill. Though this was only implicit in the analysis, aggregate profits were always explained in this way and, in the aggregate, the economy was always considered to be in equilibrium in terms of gains and losses through distribution. Prices in the aggregate always equaled the cost of production and, therefore, profit could only *originate* in the process of production. This the classical system attempted to make explicit.

But Smith's system of analysis, unlike Ricardo's, made assumptions with respect to both the macrocosm and the microcosm, recognizing the importance of setting the two problems in some relationship of functional consanguinity. On the micro level, the part played by demand was that it might determine market price for particular commodities with the cost of production in a very minor role. Use value becomes significant in that the market price of "every particular commodity is regulated by the proportion between the quantity which is brought to market and the demand of those who are willing to pay [at least] the natural price."[33] Competition among demanders might tend to make particular market prices different from the real price "according as the acquisition of the commodity happens to be of more or less importance to them."[34]

But what role can demand play in such a system as the classical political economy? According to Say's law, that total demand is a function of total supply, the amount of purchasing power which individuals have at their disposal, in either net or gross terms, is limited and set by the level of production. In this way the amount of "value" in the system is determinate and can not be increased through individual exchange unless the materialistic notions of value are rejected, as they are by Lionel Robbins. Within the system of Smith, however, and we should use his postulates and assumptions if we are to understand his analysis, the individual demand is always functioning within the framework of the system and the consumer equations, as such, are dependent and not independent variables. The degree of freedom which consumers can exercise lies in their ability to reallocate the ratios at which particular goods exchange. But no value is added by this process; value has arisen in the process of production and the total amount of it is unaffected by the *ex post* decisions of consumers. In this way it is correct to say that the utility school does not have a theory of production and concerns itself exclusively with the redistribution of goods because it always

with profits in the macrocosm. *Collected Works*, Vol. IV, "Essay on Profits," pp. 9–41. See also G. Stigler, "The Ricardian Theory of Value and Distribution," *Journal of Political Economy*, June 1952, p. 200.

[33] *Wealth of Nations*, p. 56.

[34] *Ibid.*, p. 57.

assumes that the production process is *ex post* to the *ex ante* decisions of consumers. In the classical formulation, the relationship is reversed and consumer demand functions within the framework of the production process wherein individuals assign different "use values" to particular goods, but no exchange value is thus created.

The same is true of the classical theory of profits. The aggregate amount of profits is the difference between the output of labor and the total wage bill. There may be a redistribution of this profit fund, but this will not affect its size. The latter is a function of the production coefficients which accompany the labor-capital contract.

The theory of individual prices, and therefore individual profits, takes its direction from, and exists within, the framework of the general accumulation of capital which, in the classical system, is the dynamic factor in the economic system. In this "growth" analysis,[35] individual prices and profits are subsidiary to the general equilibrium problem, and should only be understood in such a relationship. But Smith, as has been suggested, did have a discussion of these strictly microscopic phenomena. His theory of price, in its modern terminology, is that price reflects the influence of market conditions upon the transfer of particular commodities. Leaving aside the effects of what Marx called the "organic composition of capital," these influences are grouped under five categories: Accidents,[36] natural causes,[37] police regulation,[38] ignorance,[39] and, most important, monopoly.[40] The latter receives by far the longest discussion, as the inequality and distortion of some prices from their natural or real price, "is upon every occasion the highest which can be squeezed out of the buyer." But price could not affect the aggregate amount of exchange value unless monopoly implications caused such a distortion of distribution that funds were misused and the amount of investment in future periods retarded. Then the monopoly problem becomes a "growth" problem, since the size of future annual flows becomes influenced by the distribution of goods in previous periods. In this framework monopoly is assigned a quite different rôle than that usually associated with the theory of price, and it was just this designation which concerned Smith and the rest of the classical school.[41]

return to the central theme, the supply and demand analysis, in which

[35] For a discussion of the growth theory of classical economics, see R. F. Harrod, *Towards a Dynamic Economics* (London: Macmillan, 1948), pp. 15–18; B. S. Kierstead, *The Theory of Economic Change* (Toronto: Macmillan Co., 1948), Chap. IV; W. J. Baumol, *Economic Dynamics* (New York: Macmillan Co., 1951), Chap. II.

[36] *Wealth of Nations*, p. 60.

[37] *Ibid.*, pp. 58, 6–61.

[38] *Ibid.*, pp. 59 and 62.

[39] *Ibid.*, p. 60.

[40] *Ibid.*, p. 61 and Book IV, Chaps. 1–8.

[41] It is interesting to note that Schumpeter also saw this as the major repercussion of monopoly. See *Capitalism, Socialism and Democracy* (New York: Harper & Brothers, 1947), Part II; also E. Domar, "Investment, Losses and Monopolies," *Income, Employment and Public Policy*, Essays in honor of Hansen (New York: W. W. Norton, 1949), pp. 33–53.

demand is an active influence upon price, can be looked upon as remaining within the boundaries of Say's law, wherein aggregate demand is dependent upon the cost of production. The law appears valid in an *ex post* analysis. It is only when period analysis is introduced that its usefulness comes into question. Marshall, among others, modified the early attempts of the utility school to dispose completely of cost of production analysis by pointing out the necessity for long-run considerations.[42] But the contradiction between the cost of production theory and the demand analysis of the utility school is not just one of market period as against long run, as Marshall claimed. In classical theory the dichotomy is always present, but is explained in terms of microscopic movements within the dynamics of the aggregate system. When the relationship between pricing and the economic process is so viewed, there is no contradiction. It is only in the light of utility assumptions that contradictions appear.

CONCLUSION

In conclusion we can say that the discussion of market price is in the main restricted to Chapter VIII of Book I and does not contain anything more than an indication of the direction of Smith's analysis. Later *micro-oriented* economists were certainly correct in claiming that Smith's discussion was not as elaborate as it might have been. But this was the nature of classical economics. As Professor Lange has said, "The range of validity of partial equilibrium theory is . . . very limited . . . we need, therefore, to study the repercussions of the changes in the price of one factor upon the prices of other factors and upon the prices of products. This leads us from partial equilibrium to general equilibrium."[43] This was what the classical school attempted to do, and it was in the macrocosmic formulation of their system that the labor theory of value was the key to the understanding of the movement in the base of the system.[44] The partial analysis was concerned with the superstructure wherein the distribution of the output of labor was allocated among the different members of society in accordance with sociological and institutional parameters.

According to Smith's labor theory of value, wherein value originated in the process of production, prices tended always to equal cost of production, as the sum of the prices above real value would always equal the sum of those below real value. This was true in the aggregate and in the long run—which we should consider synonymous terms. Smith's discussion of the causes for the distortion of the market price from the real price are indications of partial analysis which the *Wealth of Nations* contained. But they do not necessitate the scraping of the labor theory of value, as the microcosmic movements of individual prices below or above real price were always assumed to be governed by the process of capital accumulation.

[42] J. Viner, "The Utility Concept of Value and Its Critics," *Journal of Political Economy*, 1925, pp. 369–387, 638–659.

[43] *Price Flexibility and Employment* (Bloomington, Ill.: Principia Press, 1944), pp. 3–4.

[44] For a discussion of the adequacy of Smith's analysis as an introduction to general equilibrium theory, see Bladen, *op. cit.*, pp. 41–43.

RESOURCE ADJUSTMENTS TO EQUATE PRODUCTIVITIES IN AGRICULTURE*

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In a previous study we presented the basic figures from a production function study in agriculture.[1] These data were used to test the inter-area allocation of resources in four agricultural regions and to compare marginal resource productivities with the prices of resources. With these steps behind us and recognizing that our estimates may include some predictional error we use these same basic data for analysis of this study. In this study, we examine (1) the effects of different quantities of capital on labor productivity (2) the degree to which resources are allocated optimally between farm products in specific farming areas (3) the capital adjustments required to equate marginal resource productivity and (4) the capital-labor substitution ratios in four selected farming areas of the United States.

BASIC DATA

As background, we present the data in Tables 1 and 2. These are based on four random samples covering the 1950 production year in the Alabama Piedmont, northern Iowa, southern Iowa and a dry-land farming area of Montana.[2] In each of the areas a production function was predicted for crops and livestock separately. The function used for crops is of the form $Y = aL^{b_1} D^{b_2} C^{b_3}$ where Y is the year's value of crops produced on cropland, L is labor in months, D is land in acres and C is capital services in dollars (all capital items used for crops, including seed, fertilizer, tractor fuel, etc.) computed to give the annual input and not the investment (i.e., it is the annual expense for capital items including depreciation).[3]

* Journal paper J-2414 of the Iowa Agricultural Experiment Station, project 1135.

[1] Earl O. Heady, "Resource Returns and Productivity Coefficients in Selected Farming Regions," *Journal of Farm Economics*, Vol. 36, May 1954.

[2] The authors are indebted to John Snare, Alabama Polytechnic Institute, for making data available from Alabama.

[3] The algebraic form of this equation is commonly known as a Cobb-Douglas function. Its use, application and limitations in other studies have been illustrated in the following publications: Earl O. Heady, "Production Functions from Random Samples," *Journal of Farm Economics*, Vol. 28, November 1946, pp. 989–1004. Earl O. Heady, "Estimation of Input-Output Ratios," *Journal of Farm Economics*, Vol. 34, November 1952, pp. 775–786. Paul H. Douglas and Grace T. Gunn, "The Production Function for American Manufacturing in 1919," *American Economic Review*, Vol. 31, March 1941, pp. 67–80. Paul H. Douglas and Grace T. Gunn, "The Production Function for American Manufacturing for 1914," *Journal of Political Economy*, Vol. 50, August 1942, pp. 595–602. Paul H. Douglas, Patricia

TABLE 1

Regression Coefficients and Related Statistics

ITEM	MONTANA	NORTH IOWA	SOUTH IOWA	ALABAMA
A. Crop production				
Value of α; log form	.5949	1.2731	.7182	.9789
Value of elasticities				
Labor β_1	.0394	.0756[b]	.0875[b]	.3192[a]
Land β_2	.5032[a]	.9124[a]	.7948[a]	.3847[a]
Capital services β_3	.5804[a]	.1647[a]	.3930[a]	.4627[a]
B. Livestock production				
Value of α; log form	.2763	.3593	.0571	.7370
Value of elasticities				
Labor β_1	.0839[b]	.0769[c]	.1166[c]	.2334[a]
Capital services β_3	.9370[a]	.9067[a]	.9820[a]	.7431[a]

[a] Significant at 1 per cent probability level.
[b] Significant at 8 per cent probability level.
[c] Significant at 5 per cent probability level.

The livestock function $Y = \alpha L^{\beta_1} C^{\beta_3}$ where C is annual capital inputs including livestock depreciation, or purchase of feeder animals, veterinary and breeding fees and similar items. (The resources are measured in annual service flows and not in investment.) Labor for livestock (L) again is measured in months.

Generally, the derived production elasticities, which are presented in Table 1, can be accepted at conventional probability levels. These statistics have been used in deriving the marginal quantities of Table 2. Using the coefficients from Table 1 (all of which indicate diminishing resource productivity for single factors since they are less than 1.0) along with the resource inputs of Table 2, we expect the ordering of marginal products shown in Table 2. The different capital/labor ratios lead to the *a priori* hypothesis that labor productivity will vary greatly in magnitude between the four areas. The ratio of capital to labor is much higher in north Iowa and Montana than in south Iowa and Alabama; it is much higher in south Iowa than in Alabama. Labor productivity for crops is highest in north Iowa and Montana where the amount of land and capital per worker is greatest; south Iowa is slightly lower and Alabama is lowest. Probability tests do not allow us to say that differences in marginal labor productivity are signifi-

Daly and Ernest Olson, "The Production Function for Manufacturing in the United States 1944," *Journal of Poltical Economy*, Vol. 51, February 1943, pp. 61–65. Gerhard Tintner, "A Note on the Derivation of Production Functions From Farm Records," *Econometrica*, Vol. 12, January 1944, pp. 26–34. Gerhard Tintner and O. H. Brownlee, "Production Functions Derived from Farm Records," *Journal of Farm Economics*, Vol. 26, August 1944, pp. 566–571. M. Bronfenbrenner, "Production Functions: Cobb-Douglas, Interfirm, Intrafirm," *Econometrica*, Vol. 12, January 1944, pp. 35–44. M. W. Reder, "An Alternative Interpretation of the Cobb-Douglas Function," *Econometrica*, Vol. 11, July–October 1943, pp. 259–264. Jacob Marschak and William H. Andrews, "Random Simultaneous Equations and the Theory of Production," *Cowles Commission Papers*, New Series, No. 5. Gerhard Tintner, "Multiple Regression for Systems of Equations," *Econometrica*, Vol. 14, January 1946, pp. 5–36.

TABLE 2

Mean Resource Quantities, Marginal Product and Gross Average Product of Resource Services. All Inputs at the Arithmetic Means of Table 2[a]

	MONTANA	NORTH IOWA	SOUTH IOWA	ALABAMA
A. Crop function				
Arithmetic mean:				
Product; actual ($)	21419	8551	4777	1322
Cropland (acre)	975.0	166.6	114.9	23.8
Labor (mo.)	13.7	9.5	8.7	10.4
Machine-crop capital services ($)	5207	2168	1420	553
Investment per man year	67866	62430	32064	3255
Marginal product				
Cropland not pasture ($/acre)	11.06	46.83	33.05	21.37
Labor ($/month)	61.80	68.04	48.05	40.57
Machine-crop capital services ($/$)	2.39	.65	1.32	1.15
Average product[b]				
Cropland not pasture ($/acre)	21.97	51.33	41.58	55.55
Labor ($/month)	1559	905	547	127
Machine-crop capital services ($/$)	4.11	3.94	3.36	2.39
B. Livestock function				
Arithmetic mean:				
Product; actual ($)	12084	13943	9067	1336
Predicted product ($)	11389	13986	9324	1258
Labor (mo.)	8.9	8.2	7.3	3.5
All capital service inputs ($)	8896	12543	7614	1017
Investment per man year	23163	18078	15207	4340
Marginal product				
Labor ($/month)	113.92	130.76	144.83	89.09
Capital service inputs ($/$)	1.27	1.06	1.17	0.97
Average product[b]				
Labor	1351	1694	1238	378
All capital service inputs	1.36	1.11	1.19	1.31

[a] A marginal product for land of $11.06 in Montana means that one more acre of land adds $10.32 to value of product produced. The figure for labor means that one month adds $61.80 to total product while one more dollar of capital adds $2.39 to value of product produced. Interpretation is the same for other resources and other areas.

[b] Is total predicted product divided by mean input of particular resource.

cantly great in the first three areas. However, these orderings are those expected from (1) the capital/labor ratios in the four areas, (2) the knowledge of agricultural workers and (3) the findings of previous scattered investigations. For capital and land resources used in crops, differences in marginal resource productivity differ significantly between the four areas. Important differences also exist between areas for resources used on livestock. Returns for capital are highest in Montana and south Iowa where less of this resource is used than in north Iowa. They are lowest in Alabama where capital inputs hardly allow livestock on a commercial scale.

Since these basic figures are analyzed in detail elsewhere, we proceed with the objectives of our current study.

EQUILIBRIUM BETWEEN PRODUCTS WITHIN REGIONS

Having examined the mean marginal products for each resource used in crop and livestock production in each area, we may ask: Are these computed differences between crops and livestock significant? If they are, our first conclusion may be that resources are not allocated between products within a region to either (a) maximize farm profits or (b) give a maximum national product from given resources. Since the marginal return of crop capital in Montana is $2.39 while the return on livestock capital is only $1.27, it appears that capital resources should be shifted from the latter to the former product. On the basis of the predicted marginal figures in Table 2, capital should be shifted from crops to livestock in north Iowa and Alabama and in the opposite direction for south Iowa. Given the productivity figures in Table 2 for labor, the other common resource for the two products, it should be allocated from crops to livestock in four areas.

Since, however, the estimates involve sampling errors, our inferences need to be subjected to a probability test.[4] In terms of probability and sampling error, say that the marginal productivity of labor is higher for crops than livestock in Montana or north Iowa (Table 3). We can more nearly state that the differences expressed for marginal labor productivity on crops and livestock are significant in Iowa and Alabama. Greatest difficulty in a study of this kind arises in the enumeration of labor inputs. While the farmer can quickly enumerate the number of crop acres operated, the amount of fertilizer purchased or expenses for tractor fuel (he usually has the latter recorded with other expenses), it is difficult for him to specify actual labor inputs, except for hired help; he is prone to report the "stock" of operator and family labor available, rather than the amount actually used in production. While detail of our study and questionnaires may have partly eliminated this problem, it still exists. It is our hypothesis that even more detailed labor records might lower the variance associated with enumeration bias and actually unfold more important differences in labor productivity. However, there may exist logic for supposing that differences in labor productivity do not exist in fact. The farmer controls the allocation of the family labor, and does not have its use tied to certain resources or products as in the case of capital obtained through the credit market. Accordingly, he may be more nearly able to allocate labor to equate its marginal productivity between products than he is for capital.

[4] To make this test, and retain simplicity, we have determined β'_c, the elasticity coefficient necessary to give a marginal product for resources used on crops equal to the marginal product of the same resources used on livestock. It has then been subjected to a null hypothesis test in comparison with β_c, the derived coefficient for the same resource used on crops. In other words, we set $\frac{d\bar{Y}_c}{d\bar{R}_{c_i}}$ the marginal product of the particular resource used on crops, equal to the marginal product for the same resource used on livestock. Hence, we obtain (1) and finally (2), where $\bar{Y}$ is the mean product and $\bar{R}$ is the mean resource input for crops or livestock. Using these simple procedures we obtain the t values in table 3.

$$(1)\quad \frac{d\bar{Y}_c}{d\bar{R}_c} = \beta'_c \frac{\bar{Y}_c}{\bar{R}_c} = \beta_l \frac{\bar{Y}_l}{\bar{R}_l} \qquad (2)\quad \beta'_c = \beta_l \frac{\bar{Y}_l \bar{R}_c}{\bar{Y}_c \bar{R}_l}$$

TABLE 3

Value of t for Comparing Elasticity Derived in Crop Production with Computed Elasticity Necessary to Give Marginal Productivity for Crops Equal to Marginal Productivity[4] for Livestock

RESOURCE	MONTANA	N. IOWA	S. IOWA	ALABAMA
Labor	.39[a]	.77[a]	1.43[b]	1.87[b]
Capital	2.20[a]	1.31[b]	.56[c]	.62[c]

[a] 0 *p* 5.
[b] 10 *p* 20.
[c] *p* 40.

[4] The simple test made here includes the following steps: First, the elasticity of production necessary to give a marginal product in crop production equal to the marginal product of the same resource in livestock production is computed. Our task is to compare β_c, the elasticity actually derived for crops with β_c, the elasticity necessary to give equal elasticities. It is computed in the manner of (1) and (2) below:

$$(1)\quad \frac{d\bar{Y}_c}{d\bar{R}_c} = \beta'_c \frac{\bar{Y}_c}{\bar{R}_c} = \beta_1 \frac{\bar{Y}_1}{\bar{R}_1} \qquad (2)\quad \beta'_c = \beta_1 \frac{\bar{Y}_1 \bar{R}_c}{\bar{Y}_c \bar{R}_1}$$

The standard error, s_{b_p}, for the pooled variances

$$(3)\quad s_{b_p} = \sqrt{s_c^2 + \left(\frac{\bar{Y}_1 \bar{R}_c}{\bar{Y}_c \bar{R}_1}\right)^2 s_1^2}$$

is then computed as in 3 and the value of t is given in 4

$$(4)\quad t = \frac{\beta_c - \beta_1 (\bar{Y}_1 \bar{R}_c / \bar{Y}_c \bar{R}_1)}{\sqrt{s_1^2 + \left(\frac{\bar{Y}_1 \bar{R}_c}{\bar{Y}_c \bar{R}_1}\right)^2 s_c^2}}$$

Still, where capital and labor are technical complements, the banker who specifies that the farmer can have credit for feeder steers but not for seed or fertilizer also is specifying how labor should be used; labor for feeder steers rather than for crop services may cause its marginal products to diverge even further, rather than to converge between products.

In terms of probability, we may infer that the mean marginal productivity of crop capital in Montana was significantly greater than for livestock capital in 1950. Had Montana farmers known this outcome beforehand, they should have used more of their limited funds for crops and less for livestock. They could not, however, predict the more favorable weather for crops in 1950 and their *ex ante* decisions to operate as they did may not have been in error. Of course, many capital-short farmers produce crops rather than livestock because they do not have to tie up as great an investment per $1.00 of annual input or output as in beef production. Following the figures of Table 2, less capital should have been used for crops and more for livestock in north Iowa had (1) farmers been attempting to maximize profits and (2) known the actual outcome of yields and prices. Since capital productivity is higher for livestock than for crops in north Iowa and since the value of t is relatively high, we might infer that too much capital

is used on crops and too little on livestock in northern Iowa. While the level of the computed productivity figures may not serve too accurately in predicting exactly the population parameters, the ordering of productivities and the inference outlined above seems to be in line with the structure of production in the area. About one-half of the farms are rented; many of these produce little or no livestock. Livestock would be profitable on these rented farms but because of uncertain tenure, many tenant operators keep little livestock. On the other hand, tenants tend to invest a relatively large amount of capital in machinery, one of the components of the crop capital services outlined above. It is entirely likely that "at the margin," more investment in machinery (and hence in capital services for crops) would give less than $1 in product for every $1 in expense. North Iowa, relative to the products produced, is about as highly mechanized for crops as any other United States region. Capital for crops in the form of machinery may have been used, as a matter of convenience and to ease the drudgery of farm work, beyond the input level necessary for equating expected and discounted marginal costs and returns. Our models do not take into account this firm-household interrelationship.

The probability tests do not indicate significant differences between capital returns on crops and livestock in Alabama and south Iowa. From these first estimates, we might infer one or both of two things: (1) farmers have capital allocated optimally between products or (2) given certain supplementary enterprise relationships between crops and livestock and a "stock" of labor which could not be used on crops during winter and "slack season" periods, use of some capital on livestock (which might have returned more in other seasons on crops) was profitable as long as it gave marginal products at the level indicated for labor. The major part of the livestock products on the Alabama farms is used directly in the home and even though the capital may not "pay for itself," production for this purpose may be economically rational in terms of convenience and "comparative cost" for the household (and the fact that "unemployed" labor exists on the farm).

Our algebraic model does not allow us to include all the competitive, supplementary and complementary product and resource relationships encountered in farm production. If we compare the sum of elasticities for crops with those for livestock, they suggest production possibility curves which are convex to the origin. Aside from south Iowa, they would say that under constant returns conditions for livestock and increasing returns for crops, only crops or only livestock should be produced. But since the statistics do not include the possibility of supplementary products (using resources between seasons), a combination of products rather than use of resources for crops alone can be consistent with the technical production relationships as they exist on farms.

CAPITAL TO EQUATE MARGINAL LABOR PRODUCTIVITY

Assuming that we are willing to accept the overall functions as the best statistics available in representing the parameters of each area, we now ask: what amounts of capital would give equal marginal productivities of labor in the four

TABLE 4

Capital Services Necessary on Crops to Give Marginal Labor Productivity Equal to North Iowa Average

STATE	AMOUNT OF CAPITAL SERVICES
Montana	6,953
North Iowa	2,168
South Iowa	3,490
Alabama	4,291

areas? In other words, if no other data were available to predict these quantities (a statement which is fact and not fiction) and we were faced with the necessity of making these predictions, what are the quantities? Estimates are provided in Table 4 for crops. These figures may, of course, be somewhat unrealistic since only capital is used as a 'variable'; the mean land and labor inputs of each area are used as constants in the sense of "fixed plants."[8] If land were also varied along with capital (i.e., if size of farm in acres were increased) much smaller additions of capital would be required in south Iowa, Montana and Alabama to give marginal labor productivities equal to the north Iowa average. Also, capital representing new techniques rather than those found on the many small farms in Alabama would allow the marginal labor product in this area to rise to the north Iowa level with smaller inputs than shown in Table 4.

Capital on Crops to Equal Marginal Capital Productivity on Livestock

We have also prepared estimates to show the quantity of capital services which would be needed for crops (with the 'farm plant' still fixed in labor force and acres) to give a capital productivity equal to that for livestock in each area. These figures are $15,812 for Montana, $1,198 for north Iowa, $1,741 for south Iowa and $648 for Alabama. In comparison to Table 2, these estimates would represent (1) a three-fold increase in crop capital for Montana because of the high marginal productivity of crop capital relative to livestock capital, (2) a decrease of around 50 per cent in north Iowa because of the low marginal productivity of crop capital and (3) only insignificant changes in south Iowa and Alabama since capital productivity is more nearly at the same level for crops and livestock. Inter-product adjustments in resources such as these perhaps are more nearly feasible than the inter-area adjustments outlined above because of imperfections in the factor markets of agriculture.

EQUAL CAPITAL ON CROPS

In the last section we examined the quantities of capital necessary to equate labor productivities for the various areas. We now ask: How would labor productivity be affected if farms had the same amount of capital (both in land and

[8] The type of errors attaching to these predictions especially include (1) sampling variance and (2) the possibility that while the particular algebraic model may serve fairly efficiently for "mean" estimates, it may involve greater error for estimates away from mean inputs.

TABLE 5

Marginal Product of Crop Labor in Dollars per Month with Land and Capital Services for All Areas Equal to Montana Average, 1950

MONTHS OF LABOR	MARGINAL PRODUCT PER MONTH LABOR			
	Montana	North Iowa	South Iowa	Alabama
Labor at mean	57.33	133.19	204.42	
8	96.41	155.32	220.68	
10	77.80	126.36	180.02	
12	65.30	106.77	152.43	
14	56.32			
Quantity of machine-crop services ($)[a]	5207	4098	4828	6697
Quantity cropland not pasture (acres)[a]	975.0	314.9	390.7	288.2
Value all capital services ($)	8201	8201	8201	8201
Adjusted investment ($)[b]	77628	92884	79271	34296
Capital services as per cent of own mean (%)	100.0	189.0	340.0	1211.0

[a] Quantity of capital services and land (rental value) required to give input of all annual, non-labor resource services equal to Montana average (which serves as the basis for estimating labor productivity in top half of table).

[b] Investment in land and capital necessary to give annual, non-labor resource service inputs equal to Montana average.

other capital forms) in the several areas? Estimates for resources inputs used on crops are provided in Table 5 along with the investment necessary to give an equal per farm input of capital. Capital inputs have been "raised" to the Montana level in the other three areas. Since the mean input of labor per farm differs somewhat, marginal productivities also are computed for other labor quantities; returns with comparable amounts of both capital and labor can then be examined. (Only the resource quantities are shown for Alabama since the amount of capital is too far outside the range of observations to allow "rough estimates," given the limitations of a single algebraic model and the problem of sample variance.)

With labor input at area means, equal capital causes the predicted marginal product of labor in the Iowa areas to jump above that of Montana. Since the mean quantity of labor used in Montana was greater than for other areas, the alternative productivity figures can be used to compare marginal labor productivity for parallel quantities of labor with capital equal to the Montana average in all areas. However, even for the same quantity of labor, the marginal returns of labor in Iowa are greater than for Montana. With naive significance tests paralleling those outlined earlier, the differences between areas are not significant, however.

The capital-labor quantities and ratios shown above for the three areas fall in ranges of the samples which included observations for each. The quantity of capital services ($8,201) used was, however, considerably outside of the range of observations in Alabama. Table 6 includes productivity estimates for Alabama when variations in land and capital services are within the range of the sample. Even using the 'modest' capital service input of $2,718 and the investment of

TABLE 6

Marginal Product of Labor in Dollars Per Month in Alabama Crop Production with Capital Service Inputs at Specified Levels Relative to Mean of Alabama Sample Farms

MONTHS OF LABOR	MARGINAL PRODUCTIVITY OF LABOR WITH CAPITAL INPUT SERVICES INCREASED TO		
	Twice mean	Three times mean	Four times mean
Mean (10.4 mo.)	69.99	99.97	120.40
8	83.55	117.78	150.30
10	71.76	101.19	129.12
12	63.39	89.38	114.06
Amount all capital services	$1354	$2031	$2718
Investment	$5664	$8496	$11328

$11,328 (the amount of land and machine-crop capital necessary to give an annual input of capital services equal to 400 per cent of the mean), the predicted marginal product of 8 months of labor in Alabama is $150.30. This figure is nearly as great as the productivity estimate for 8 months of labor in north Iowa and greater than for Montana, with capital at a much higher level in Table 4. Again, however, when we compare the derived elasticity of labor in each area with the elasticity to give a marginal product of labor, with the resources shown in Tables 4 and 5, equal to a contrasting area, the t values are generally non-significant. Our conclusion, then, is this: with comparable quantities of capital to go with it, the productivity of a given labor input does not differ significantly between areas.

Productivity of Resources by Labor and Capital Strata on Livestock

In order that comparison might be provided of resource combinations and productivities between groups of farms within individuals areas, the data and estimates of Table 7 for livestock have been prepared for nine capital-labor groups in each of the areas. The nine strata shown were delineated in this manner: First, all farms were separated into three groups in terms of labor inputs for livestock production; each labor group includes one-third of the farms in the sample area. Second, all farms were separated into three groups in terms of the annual input of capital services (stratification is not in terms of capital investment but in terms of the estimated value of all services used, i.e., the expenses attached to the resource on a 'hired' or 'purchased' basis, even where they are owned).

Differences in inputs between states for the same labor-capital stratum are very great. The low labor-low capital group of farms in Alabama used an average of only $210 in capital services per farm and had an investment per farm in live-stock and equipment of only $492; in the same stratum, north Iowa farms used an average of $4,235 of capital services and had an investment of $6,995. The investment per man equivalent in Alabama is $4,484 while it is $23,064 in north Iowa. At the other extremes, Montana farms in the high labor-high capital group used $28,190 in capital services and had an investment of $28,161 per man;

TABLE 7

Comparison of Resource Inputs and Productivity by Labor and Capital Strata

LABOR GROUP AND ITEM	CAPITAL GROUP											
	Montana			N. Iowa			S. Iowa			Alabama		
	low 1/3	middle 1/3	high 1/3	low 1/3	middle 1/3	high 1/3	low 1/3	middle 1/3	high 1/3	low 1/3	middle 1/3	high 1/3
Low labor:												
Labor (mo.)	1.9	3.1	—	3.6	4.0	4.4	3.8	4.7	3.7	1.3	1.3	1.4
Capital ($)[a]	1820	4658	—	4235	9963	18717	2838	5960	13770	210	526	1964
Inv./man[b]	17321	28733	—	23064	29555	42778	17211	17413	46922	4484	8906	15534
Labor M.P.[c]	80	130	—	104	206	336	100	173	498	55	107	271
Labor A.R.P.[d]	2135	3149	—	2469	331	1964	827	2110	4278	891	9	−378
Capital M.P.[e]	1.18	1.16	—	1.05	.98	.93	1.14	1.15	1.10	1.10	.87	.63
Middle labor:												
Labor (mo.)	5.8	6.2	7.4	7.0	7.1	7.3	6.8	6.8	6.9	2.4	2.3	2.6
Capital ($)[a]	2854	5249	14589	4863	9316	17424	3399	6314	12909	257	516	1325
Inv./man[b]	8371	14457	22893	12537	16880	26051	9520	14837	21073	3563	4195	8042
Labor M.P.[c]	30	64	180	64	114	197	72	131	262	40	71	128
Labor A.R.P.[d]	384	1823	2318	1274	1605	244	2053	1396	2995	917	598	1014
Capital M.P.[e]	1.20	1.23	1.15	1.09	1.03	.97	1.21	1.20	1.18	.80	.99	.83
High labor:												
Labor (mo.)	—	11.8	20.0	12.6	14.0	14.0	9.3	11.5	12.7	—	5.4	7.9
Capital ($)[a]	—	6251	28190	4942	9832	27839	3174	6140	14404	—	555	2766
Inv./man[b]	—	7553	28161	10017	9165	19279	7238	9637	16530	—	2551	4000
Labor M.P.[c]	—	37	129	45	64	165	51	81	171	—	38	94
Labor A.R.P.[d]	—	455	4255	790	1173	841	503	563	1654	—	327	1263
Capital M.P.[e]	—	1.30	1.21	1.34	1.08	.99	1.26	1.27	1.27	—	1.18	.86

[a] Capital services in annual input for livestock.

[b] Capital investment per 12 months labor.

[c] Marginal product of labor (dollars per month) with labor and capital inputs equal to mean of strata.

[d] Average residual product per 12 months of labor computed as follows: The value of all annual capital services has been subtracted from the value of product; the remainder is divided by each 12 months of labor to give the average residual product of labor per man year. Even measured as the average residual product per month, this figure is larger than for the marginal product since (1) the marginal product declines (an elasticity of less than 1.0) for labor and hence is less than the average product and (2) the residual process imputes part of the product of capital to labor. The capital expenses subtracted to obtain the residual for labor are computed at the market price of capital items. Since these quantities are less than the marginal productivity of capital, this "surplus" is arbitrarily allocated to labor.

[e] Capital productivity in dollars per $1 annual input with labor and capital at the mean.

In this table marginal products have been computed in the manner $\frac{d\hat{Y}}{d\bar{R}} = \beta \frac{\hat{Y}}{\bar{R}}$ where $\bar{R}$ is the mean resource input, $\hat{Y}$ is the predicted product and β is the elasticity. While differing slightly from those obtained with $\bar{Y}$ rather than $\hat{Y}$, these figures show the same general relationship between strata.

Alabama farms in the same labor-capital group used $2,766 services and had an investment of $4,000 per man equivalent. The ratio of capital services and investment per man were generally greatest throughout all strata for north Iowa, followed by Montana, south Iowa and Alabama.

These data suggest that opportunities are great between groups of farms within areas for readjusting uses of resources to increase labor productivity and income. In south Iowa, for example, the figures within the 'low labor' strata, and between low and high capital groups, show an estimated increase in marginal and average residual labor productivity of around 500 per cent, with an increase of about $10,932 in investment per farm. (The greater difference shown in the investment/man ratio grows out of the fact that labor inputs do not increase between strata proportionally to capital.) In Montana the differences between the medium and high capital strata within the high labor group show an increase of slightly more than 350 per cent in the marginal productivity of labor and of nearly 940 per cent in the average residual productivity of labor, with an increase in investment by $38,546; the marginal product of capital is still $1.21 at the higher investment level.

The types of group comparisons of particular interest in Table 7 are: (1) those within a labor group but horizontally between capital groups for the tables and (2) those diagonally from northwest to southwest over the cells of the table. In other words a family with some underemployed labor, or one that can or is willing to hire more labor, is interested in returns from and productivity of resources as both more of labor and capital are used in production. The productivity figures show an increase in the marginal productivity of labor and a decrease for capital in comparisons between capital groups within a labor stratum (i.e., for movements horizontally across the cells). For comparisons 'down' the cells of the tables, marginal productivities of labor decline and those of capital increase as labor is increased relative to capital inputs. Aside from a few exceptions due to sampling variations the average residual productivities of labor show similar changes in magnitude. With the alternatives in accounting procedures which can be used by farm operators for decision-making, adjustments in quantities and proportions of resources (reflected between labor and capital groups) would generally be profitable. While labor productivity increases, and, in most cases, capital productivity declines for these "across" and 'diagonal' comparisons, the marginal productivity of capital is still above its cost in Montana and south Iowa and labor productivity increases materially. Labor productivity increases by large amounts under these "across" and 'diagonal' comparisons for Alabama and north Iowa but the marginal return for capital is less than its cost for farms using the extreme amounts of capital under both the "across" and 'diagonal' comparisons. Two types of phenomena, aside from sample variance, may explain this decline in productivity for capital in Alabama and north Iowa. The techniques used in livestock production in Alabama were 'less efficient' (in a purely physical sense) than those of other areas; increased capital might thus have low returns even for small amounts of capital unless invested in techniques other than those characterizing the sample farms. While the techniques were, physically at a 'higher level' in north Iowa, the quantity of capital used, as an average in

all farm groups, was relatively high; extended use of capital would be expected to accompany a lower return than for other areas. However, since the pricing mechanism requires only that farmers pay the market wage rate for labor, or since unpaid and unemployed family labor may be on hand, an increase in use of capital, or capital and labor, which boosts labor productivity sufficiently can cause use of added capital to be profitable also; the farmer's 'accounting system' allows him to impute part of the "excess product above its price" of labor to capital services, even though the latter resource may have a "deficit product below its price." These types of accounting procedures suppose, of course, that a semi-complementary relationship exists between capital and labor; if more of one resource is used, more of the other must be used. Certainly technical complementarity exists if wide adjustments are made in capital ratios. However, the wide differences in ratios of capital and labor between groups displayed in Table 7 illustrate that these resources need not be used in combinations denoting technical complementarity. Also, statistical tests (the magnitudes of correlation coefficients between quantities of the various resources used) did not denote 'fixed proportions' in the use of capital and labor. In this sense, the final task of the farm operation in maximizing profits, if optimum quantities and proportions of resources are to be used, is to add to each specific category of resource as long as its marginal value productivity is greater than its cost. (As pointed out later, capital limitations and other considerations prevent this 'complete adjustment.') The average residual labor product in north Iowa and Alabama supports the notion that marginal capital productivity actually does become less than $1 across capital strata within a labor stratum. As indicated in the footnote of Table 7, the residual labor product will increase with greater use of capital if the marginal product of capital is greater than the price of capital, residual labor product will decline if the marginal product of capital is less than the price used in the residual imputational procedure. In Montana and south Iowa, where the marginal productivity of capital is much greater than its price, residual labor productivity does increase across capital strata; this is not universally true for north Iowa and Alabama and residual labor productivity is erratic or declines with greater capital and a lower marginal productivity of capital.

In a total economy where labor serves as a limiting resource in increasing the national product, measured either in civilian or defense goods or a combination of the two, interest may focus on comparison of farms falling in the low labor-low capital category with those of low or medium labor and high capital. In other words, how much can the productivity of labor on small farms with a large amount of labor and a small amount of capital be increased, as labor is withdrawn from farms and capital is added?[8] Adjustments of this general nature would allow large increases in either the marginal or residual productivity of labor while

[8] Another possibility is that both less labor and less capital can be used to produce the same or a greater product on many farms. This possibility exists where small units can be consolidated and, with two or more operated by one family, power units, machinery, buildings and equipment need not be duplicated. The capital otherwise needed for these things then can be used for more livestock, fertilizer, seed or other resources representing improved techniques for crops or livestock.

leaving the returns for capital at a high level in south Iowa and in Montana. Marginal productivity of labor would increase in north Iowa and Alabama but capital productivity would not be at a high level. Since, however, the livestock products and techniques in the Alabama sample were not on a commercial and efficient basis, capital used for commercial production with improved techniques and on an efficient scale would probably give high capital returns. In north Iowa, capital investment, in terms of computed returns, may have been pushed nearly as far as profitable. (The possibility exists, however, that improved estimating procedures and a lessening of sample variance might even give a different picture for this area.) As compared to other areas north Iowa is an agricultural region where favorable capital and income situations of farmers have allowed them to accumulate capital and combine it with labor in a manner approximating the basic "stability" conditions of economics. Alabama represents the other extreme and adjustment opportunities are great if added capital is in the form of known and improved techniques for producing livestock.

CAPITAL LABOR SUBSTITUTION IN CROP PRODUCTION

To obtain some notion of the ratios at which capital services and labor substitute in the four areas the estimates in Table 8 have been derived from the production function equations mentioned in the first of this report. Figures are derived for crops only since opportunities of capital-labor substitution are greater than for livestock; fewer machine techniques have been developed for livestock. Since both machines and capital representing biological techniques can replace labor, substitution rates were computed between the capital category of machine-crop services and labor; while it considers both possibilities in substitution, the procedure likely gives 'hybrid' or 'average' replacement rates between capital services and labor. Either machinery or crop services alone might substitute for labor at rates differing from those shown. However, interest here is more in substitution rates as 'averages' for capital services than substitution ratios for specific forms of capital. In Table 8, the figures in columns 2 and 3 show the quantity of capital services and labor which are predicted to produce the 'average' product found in the farm samples, when labor inputs are at various levels relative to the mean quantities now used. For example, with a 10 per cent reduction in labor per farm in Montana (a labor input equal to 90 per cent of the mean in the area) $5,244 in capital services and 12.4 months of labor are expected to produce the same product as $5,206 in capital services and 13.7 months of labor, the mean quantities found in the sample. Substitution, based on the algebraic models, is at diminishing rates for all areas; increasing quantities of capital services are necessary to substitute for each additional month of labor. The substitution quantities in column 5 show the quantity of capital services necessary to substitute for the amount of labor replaced, with production constant and labor and capital services combined in the proportions shown in columns 2 and 3. In north Iowa the amount increases from $105, with labor at 8.5 months and machine-crop services at $2,276, to $152 with labor at 6.7 months and capital services at $2,554. (The substitution rates refer to the differences between combinations in columns

TABLE 8

Capital-Labor Substitution in Crop Production. Output at Predicted Level for Mean Resource Inputs of Various Areas, 1950

LABOR INPUT AS PER CENT OF MEAN	QUANTITY OF RESOURCE SERVICES FOR 'MEAN' PRODUCT[a]		Months labor replaced[b]	DOLLARS CAPITAL SERVICES NECESSARY TO REPLACE LABOR[c]
	Machine-crop services ($)	Labor (mo.)		
Montana				
100	5206	13.7	—	—
90	5244	12.4	1.4	38
80	5286	11.0	1.4	42
70	5335	9.6	1.4	49
North Iowa				
100	2169	9.4	—	—
90	2276	8.5	.9	105
80	2402	7.6	.9	126
70	2554	6.7	.9	152
South Iowa				
100	1420	8.7	—	—
90	1435	7.8	.9	15
80	1452	6.9	.9	17
70	1472	6.0	.9	20
Alabama				
100	553	10.4	—	—
90	595	9.4	1.0	42
80	645	8.4	1.0	50
70	707	7.4	1.0	62

[a] These quantities have been derived from the contour equations based on the original production function. This equation, to predict machine-crop capital services with labor input at the levels specified is:

$$C = \left(\frac{\overline{Y}}{\alpha D^{\beta_d} L^{\beta_l}}\right)^{1/\beta_c}$$

where C is the amount of capital services for crops to be predicted, $\overline{Y}$ is the 'mean' value of crop production found in the sample, D is the mean cropland input found in the sample, L is the labor input on crops at the percentage levels of the table and β_d, β_l and β_c are the elasticities for the resources indicated by the subscripts and α is the constant. 'Exact' marginal rates of substitution have been obtained from the derivative of this equation.

[b] Arithmetic decrease in labor between combinations and are equal within each sample except for rounding.

[c] Arithmetic decrease in capital between combinations.

2, i.e., they are not derivatives.)[7] Starting from the mean quantity of resources (labor input at 100 per cent) the rate of substitution of capital for labor is lowest in north Iowa; a larger amount of capital services is required to substitute for labor than in the other areas. The next lowest rate is found in Alabama, followed by Montana and south Iowa.[8] A likely explanation for these differences is: (1) the existing high degree of mechanization in north Iowa and (2) the capital services in Alabama represent little high-capacity machinery but more nearly mule feed and repairs on implements still requiring a large amount of labor. (Fertilizer also is an important component of the capital service input category.) Since the power and machine capital of the Alabama sample is related mainly to mules capital in the form of other machines might well substitute at a rate higher than shown in Table 7.

Table 9 indicates the capital investment in both annual inputs and machinery investment required to substitute for the labor quantities shown in Table 8. It is not the annual cost of machines which prevent many farmers from replacing labor with capital; but more often the first outlay required to purchase the machine. If a $3,000 machine is used for only a few hours per year, its depreciation and repair costs may amount to no more than $25. However, it is not the $25 but the $3,000 which looms large in the decisions of a capital-short farmer.

When converted to a capital investment basis, the quantities necessary to substitute for labor are still greatest in north Iowa and Montana, followed by south Iowa and Alabama. In north Iowa, $2,105 in capital would be necessary for a 30 per cent reduction in labor. In contrast, the low-capital, high-labor area of Alabama would require only $770 in capital for a 30 per cent reduction in labor.

In evaluating the substitution quantities mentioned above, these points should be kept in mind: Great differences exist between samples in (1) the average level of production and resources used and (2) the average proportions of resources used, for any one level of output. For example, north Iowa uses a large amount of machinery relative to labor and has a much greater output per producing unit than Alabama. If a north Iowa farmer used as little capital as an Alabama farm,

[7] Figuring substitution rates as derivatives we get the following machine quantities 'at exactly' the combinations indicated in table 7. These quantities show the value of machine-crop services replaced by one month of labor, or conversely, the amount of capital services required to substitute for one month of labor. They are not 'simple differences' such as those of table 7, but are derivatives indicating substitution rates for changes approaching the limit zero.

PER CENT INPUT OF LABOR	SUBSTITUTION RATE ($) CAPITAL SERVICES TO REPLACE ONE MONTH LABOR OR VICE VERSA			
	Montana	N. Iowa	S. Iowa	Alabama
100	25	105	16	37
90	29	123	18	44
80	33	146	21	53
70	38	177	24	67

[8] The figures of table 8 show only annual expense items on capital such as seed, fuel or mule feed, fertilizer, machinery depreciation and repair, etc.; the figures of table 9 show the quantities required for annual outlays, except depreciation, plus the new value of machinery to replace the labor indicated.

TABLE 9

Capital Investment Necessary to Reduce Labor Inputs by 10, 20 and 30 per cent, 1950[a]

LABOR INPUT AS	CAPITAL INVESTMENT NECESSARY TO SUBSTITUTE FOR:		
	labor replaced in Table 8	each month of labor replaced	total capital investment to replace labor
Montana			
100	—	—	—
90	266	190	266
80	294	210	560
70	343	245	903
North Iowa			
100	—	—	—
90	646	718	646
80	662	736	1308
70	798	887	2106
South Iowa			
100	—	—	—
90	255	283	255
80	289	321	433
70	340	378	884
Alabama			
100	—	—	—
90	210	210	210
80	250	250	460
70	310	310	770

[a] The capital investment quantities in column 2 have been estimated from the machine investment and capital input figures found in different strata of the samples. The figures of column 3 have been obtained by dividing the parallel figures of column 2 by the amount of labor replaced and shown in table 8. The figures of column 4 are the cumulative totals of column 2 and represent the total capital necessary to replace 10, 20 and 30 per cent of the crop labor.

substitution rates computed for the mean rates of substitution of machinery capital for labor would very likely, considering the types of machinery techniques in north Iowa as compared to mule techniques in Alabama, be greater than for the Piedmont area. The substitution rates have been computed around the average of output and resource combinations. They would differ for different input combinations or different production levels.

IMPLICATIONS OF ESTIMATES

The data presented, for four farming areas representing contrasts in kinds of commodities produced and quantities and proportions of resources used, provide

the basis, within the limitations of the data and methods, for certain inferences on increasing efficiency of resources in agriculture. They show how the quantity and proportions of resources used affect the productivity of and returns from resources. Farms with few resources realize a low return on their labor resources. They may have as much of this resource as farms with large amounts of capital. However, the quantity of capital is too small, even where it gives high returns, and the productivity of the large labor input is too low to give anything but meager family incomes.

Differentials in productivity of the nature shown on previous pages of this report are not unique to particular geographic areas. They are largely a function of resource quantities and combinations. Individual farms, or groups of farms, using little capital and large amounts of labor appear to have low labor productivities in all areas. A farm in Iowa or Montana with a capital-labor ratio as low as the Alabama average has a predicted labor productivity even lower than in the latter area. With the same resources, and with management inputs as high, farmers in the Alabama Piedmont could likely realize resource returns as high as the area average presented for the other states.

Resource combinations can be found in all areas, reflected in situations found in the sample data, where the marginal value return from resources is greater than the cost of resources. Hence the question may be raised as to why low-income farms do not use more of land, livestock and other capital forms, to increase the capital-labor ratio of their farms. The extent to which each of several possible forces condition farmer decision can be determined only by further empirical study. However, observation of persons acquainted with the areas leads to the belief that these reasons are the major ones accounting for farmers' failure to use more capital: (1) The complex of few resources and low incomes in combinations with uncertainty. (2) The lack of knowledge on the part of farmers. (3) The value systems of persons established in the respective agricultural areas.

THE FEDERAL GOVERNMENT AND THE PEANUT INDUSTRY

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I

The Federal Government and Peanuts Prior to 1932

Until 1932, the federal government limited its activities in behalf of peanuts, as it did in behalf of all agricultural commodities, to those extending aid and protection. Under the dominant *laissez-faire* concept of the day, agriculture in general and peanuts in particular remained free and unhindered by governmental direction or control. Like many other crops, however, peanuts did receive the benefits of a tariff[1] and the protection the Interstate Commerce Commission extended to all agricultural products shipped in interstate commerce.[2] In addition, the Department of Agriculture gave them occasional attention in its research, informational, educational and analytical activities, especially after the turn of the century, when peanuts became for the first time a significant commercial crop. Thus peanuts were included in the Department's outlook reporting service, and with the establishment of grades for peanuts, the services of inspection were made available to the peanut industry as well. Later on, specifications for peanut products sold to the federal government were laid down by the Federal Standard Stock Catalogue Board, and the manner in which peanut products were made was included in the purview of the various pure food laws passed by Congress before 1932. Likewise, the manner in which peanuts and peanut products were sold was made subject to the regulation of the Federal Trade Commission, and liberal credit facilities were made available to peanut farmers, as to all producers of agricultural commodities, under the terms of the Farm Credit Act of 1916 and the Agricultural Act of 1923.

Although peanuts benefited from services available and protection offered to all agricultural enterprises, they received no special attention except during World War I. Then peanut production was pushed by the government, both to provide a substitute for wheat flour and to increase the amount of oil available for domestic use. To that end, peanut dealers, brokers, importers and refiners were brought under special licensing regulations. In no other way, however, were peanuts regulated by governmental action prior to the early thirties.

[1] Peanuts were first provided for by name in section 11 of the Tariff Act of June 30, 1864 (which levied tariffs of one cent per pound on unshelled peanuts and one and one-half cents per pound on shelled). Continued protection was granted by the Acts of 1883, 1890, 1894, 1897, 1909, 1913, 1921, 1922, and 1930. The tariff now stands at seven and seven and one-half cents per pound for unshelled and shelled nuts respectively.

[2] The functions of the Interstate Commerce Commission which most directly affect peanuts are its actions to prevent unreasonable, prejudicial or preferential rates and discriminatory transportation practices in interstate commerce.

The Federal Government and Peanuts Since 1932

The agricultural depression of the twenties, the industrial collapse that began in 1929,[3] and the ensuing struggle to combat both which occupied the legislative and executive branches of the federal government more and more after 1932 completely changed government-peanut relations. From a casual role in connection with peanuts, the government came to take an active and an ever more direct part in the industry. At first, while Herbert Hoover was still in the White House, it ventured no further than to undertake a rescue operation through Reconstruction Finance Corporation loans. To quote Jesse Jones, Chairman of the R.F.C. at the time:

> The great depression, which did not spare gilt-edged securities, also put its blight on the humble goober. Peanuts dropped to less than 3 cents a pound.[4] To tide the growers over that dip, we loaned $12,000,000 on peanuts in seven southern states.[5]

Such emergency relief was only the beginning of what was to become "a permanent change in the federal government's assertion of powers and assumption of activities" in regard to peanuts.[6] With the election of Franklin D. Roosevelt and a Democratic Congress in 1932, a much more comprehensive program was made possible. First, a marketing agreement for peanuts was promulgated under the provisions of the National Industrial Recovery Act of 1933. A direct attempt to determine peanut prices, it did not prove satisfactory in operation and was terminated on October 1, 1934. Next, under the terms of an amendment to the Agricultural Adjustment Act of 1933, a program providing benefit payments for both acreage restriction and diversion to oil crushing or feed use, was formulated and put into operation. The payments were to be met partially by a tax levied on peanut processing. On January 6, 1936, however, the processing tax was declared unconstitutional by the U. S. Supreme Court (*U.S.* v. *Butler*, 297 US 1), and as a result the peanut program was temporarily halted.

When it was resumed, it was drawn up along somewhat different lines. This time subsidies were granted peanut producers who contracted to reduce their acreage by releasing land from the production of peanuts, a soil-depleting crop, and devoting it instead to the culture of certain soil-conserving or soil-building crops. The authority for this program was the hastily enacted Soil Conservation

[3] Throughout the twenties, the prices farmers received for peanuts were on the decline, and they fell precipitously after 1927. The fixed charges they had to pay, however, remained about the same, while the cost of the consumers' goods and services they needed declined but little. Thus even before the Great Depression peanut farmers were in dire straits. When the market for their product was so adversely affected by the repercussions of the depression, their position weakened almost to the point of collapse.

[4] According to Ida J. White, *The Economic Aspects of the Peanut Industry* (Richmond, Va.: Federal Reserve Bank of Richmond, 1944), p. 28, peanuts reached a low point of just over one and one-half cents a pound in 1932. They remained below three cents a pound from late 1930 to early 1934.

[5] Jesse Jones, with Edward Angly, *Fifty Billion Dollars. My Thirteen Years with the RFC (1932–1945)* (New York: Macmillan, 1951), p. 103.

[6] Edwin G. Nourse, Joseph S. Davis and John D. Black, *Three Years of the Agricultural Adjustment Administration* (Washington: The Brookings Institution, 1937), p. 19.

and Domestic Allotment Act of February 29, 1936. Diversion was also continued, financed first out of the Secretary of Agriculture's customs revenue fund, and then by credit extensions to regional associations of producers[7] from the Commodity Credit Corporation.

During the first stage of peanut programming, government activity was more in the form of relief than in the spirit of reform, its chief objective being merely to stabilize peanut prices. In this, peanut programs were partially successful. At least "The average farm price [for peanuts during 1935 and 1936] was kept nearly up to the 1934–5 level and only 1 cent below that of October 15, 1934."[8] In 1938, however, with the passage of a new Agricultural Adjustment Act, reform began to be emphasized.

Since then, peanuts have been made subject to *marketing quotas*, established by producer referenda, for any year government forecasts indicate heavy production of peanuts and a possible resultant price break; *acreage allotments* for each crop year, if two-thirds of the producers have voted for quotas; and *marketing penalties*, levied against all peanuts grown over and above an allotment, if marketed in a time of surplus conditions. In addition, *commodity loans* have been made available through the Commodity Credit Corporation to producers and to the peanut cooperative associations whenever a surplus exists. Finally, and perhaps most important, a *price support* program, guaranteeing peanut farmers minimum prices for their product at a level of parity with prices in other segments of the economy, has become a feature of the peanut program.

The years since 1932 have seen not only a great expansion of government relations with the peanut industry, but the creation of an imposing superstructure of government control over it as well. Before then, the federal government merely offered research and informational aids and tariff and other protections to an otherwise independent peanut industry. After that date, the government undertook to regulate it. What Stuart Chase has to say about agriculture in general applies with pertinency to the peanut situation in particular:

> . . . agriculture was in effect collectivized—lifted clean out of the free market and put in a market where prices, or production, or both, were controlled.[9]

II

The history of peanuts and politics is interesting as a case study in government control. It is especially so because it raises some significant questions in regard to the justification, administration and appropriateness of agricultural programs that have not yet been satisfactorily answered, in spite of twenty years' experience in the formulation and operation of peanut programs.

To begin with, it has never been well explained why peanuts ever came in for

[7] Three such producers associations have been established: the Southwestern Peanut Growers' Association, with authority in Texas, Oklahoma and New Mexico; the Georgia-Florida-Alabama Peanut Association, for those three states; and the Growers' Peanut Cooperative, covering Virginia and North and South Carolina.

[8] Nourse, *et al.*, *op. cit.*, p. 133.

[9] Stuart Chase, *Democracy Under Pressure* (New York: Twentieth Century Fund, 1945), p. 92.

such extensive government control in the first place. It is hard to make peanut programs jibe with the generally accepted opinion that agricultural programs should be formulated and executed only in areas of real necessity to the total economic welfare of the United States. They are not a commodity the prices of which are controlling factors in establishing the prices of other domestic agricultural commodities.[10] Neither do the area devoted to their culture, the number of producers, the inherent importance of the crop in the domestic market and price structure, or the dollar value of the total crop loom large in the over-all picture of agricultural economics in the United States. Peanuts are at best of regional importance in the South and Southwest, and even there they are more important in Georgia and Alabama than anywhere else. They are not to be compared with wheat, corn, cotton, hogs, rice, tobacco, or milk, the original basic commodities, on any score, and in recognition of this, they were not included in the first agricultural adjustment programs. Instead, they were added by amendment, and that, despite the fact that the Agricultural Adjustment Agency itself did not advocate expansion of the original list. It may be as then Secretary of Agriculture Henry A. Wallace remembers it, that:

> The original theory of the agricultural legislation was to give the farmers producing crops for the export market the equivalent of what the tariff gave to industry. . . . Peanuts were not on the export market but the Congressmen from the south put on a drive to include peanuts as a basic commodity. I do not remember the details of the drive.[11]

In any case, a thorough examination of the public records of the debates attending the amendment to include peanuts yields no very satisfying reasons for their inclusion. Senator Harry F. Byrd, of Virginia, who sponsored the amendment explained his action on the grounds that his constituents wished that land which was being denied to cotton and tobacco producers under the acreage restriction program be denied also to producers of peanuts, so that their loss might not become the latters' gain.[12] And Senator Richard B. Russell, of Georgia, reasoned that as a result of the cotton program there would be a shift toward peanut production unless that industry was also brought under control.[13] No other reasons are to be discerned from the published committee hearings or from the columns of the *Congressional Record*. One wonders if there is in reality sufficient warrant for the elaborate and complex programs that have been evolved for peanuts.

Nor has it ever been made clear why Congress, once having included peanuts in the list of the basic commodities, has treated them collectively as one commodity, rather than treating the several trade varieties individually. Both as to market and uses, the Virginia type peanut ("the ball park peanut"), the Spanish peanut, Valencias and Runners are each quite different from the others. Yet no pea-

[10] A definition given by Nourse, *et al.*, *op. cit.*, p. 43.

[11] Henry A. Wallace to author, March 27, 1952. Wallace perhaps should have remembered that a letter from him agreeing with Senator Byrd was read into the *Congressional Record* during Senate debate on the amending legislation.

[12] *Congressional Record*, Senate, March 8, 1934, p. 3972.

[13] *Congressional Record*, Senate, March 13, 1941, p. 2207.

nut program has recognized these differences. Representative W. M. Abbitt, of Virginia, has repeatedly asked Congress to treat each type separately, setting allotments and quotas on the basis of the demands of the trade for each type, instead of on an over-all basis. That approach has failed of acceptance, however, no doubt largely due to the opposition of the Spanish and Runner interests to those of the producers of Virginia nuts, which always receive the premium prices and dominate the market. These forces are well aware that an across-the-board approach gives them some advantages of which treatment according to type would deprive them. Since the restricted area where Virginia nuts can be grown limits their political power, the over-all program has been retained.

The method of over-all treatment, however, is cumbersome to administer, and it is unsound economically as well, in that it protects the producers of peanuts which cannot easily be absorbed by the market, thus costing the government unnecessary support subsidies. Moreover, the producers of Virginia nuts, and to a certain extent of the Spanish type as well, are forced to carry producers of Runners along with them, when each might be on its own.

With particular regard to administration, the following questions are pertinent.

(1) Is the formulation and administration of peanut programs properly assigned to the Fats and Oils Branch of the Department of Agriculture? Sales of peanuts for oil are negligible compared with their sale to the edible trade, and since the repeal in 1951 of the provision extending price support to excess acreage peanuts for oil, even fewer peanuts than before have been sold for crushing. Moreover, peanut programs were instituted to bolster the edible market, to help the producers and processors of peanuts for food. It seems legitimate to ask, therefore, if peanuts should not receive governmental consideration as a food product, and if peanuts should not be taken away from those concerned with and oriented toward non-edible crops and be placed where they will be handled in the same way as those programs dealing with other food products. The false oil basis of the peanut programs may well operate to preclude a true conception of the problem.

(2) Are peanut programs drawn up in such a way that farmers and shellers can actually participate in their formation? Many producers feel that the provisions in the various agricultural acts for democratic participation in program formulation are respected more in the breach than in the observance and that despite those specific guarantees, each year's peanut program is in the nature of a *fait accompli*. Many are convinced that whatever suggestions and recommendations they make in accordance with their rights under the Administrative Procedure Act, the program is the sole product of the Fats and Oils Branch and of the Commodity Credit Corporation.[14] Stephen Pace, long a Congressman from Georgia's peanut area and now the legal representative of the Southeastern Peanut Association, looked at a recent draft program and called it a Department of Agricul-

[14] These statements are based upon the opinions of producers and shellers gathered during the spring of 1952 during a series of interviews by members of the staff of the Engineering Experiment Station of the Georgia Institute of Technology, of which the author was at that time one.

ture program throughout. He objected, albeit somewhat grandiloquently, that the "views of those who must live with the program: the men who work in the sun and plow the peanuts, the men who shell and put them in marketable shape, and the men whose job it is to get them manufactured into a product and advertise it and promote it and try to create a market for it" had not been sought and were not represented in the program. "I thought," he said, "that we were to come here [to an open meeting called by Fats and Oils Branch to discuss the 1952 peanut program] in a free, open conference, with no decisions made. . . . I regret that instead it is tied up . . . nailed down, and in the bag."[14]

Of course, it is difficult to develop a scheme to control the production of a crop even as important as peanuts. Initiation must be assigned somewhere, and an agency of the Department of Agriculture is a logical choice. It is essential, however, that its preliminary work be based on as valid information and experience as possible and that it be broadly representative of all the interests concerned. No program is a good one if it is not based on accurate knowledge of local farming conditions or if it sacrifices the interests of one part of the industry to those of another. Constant care must be exercised to assure that these essentials are adhered to.

(3) Has peanut program administration become too centralized? It has obviously drifted away from the moorings it was tied to at the outset, when all concerned emphasized that farm programs must make use of existing agencies and "be decentralized in [their] administration so that the chief responsibility for [their] success will rest with the localities of this country rather than with created bureaucratic machinery in Washington."[15] Instead of responsibility being widely distributed at the base of the triangle, it has tended to gather more and more at the top. Very little independence or discretion is now allowed the local people; to all intents and purposes, the entire peanut program is Washington oriented and Washington led.

There are good grounds on which to argue that its administration should be returned to the local level, to the county and community committees, and that programs should be made flexible enough to permit local leeway and allow enough discretion on the local level to permit variations to suit local problems and needs. The local staff, not the Washington staff, would then carry a greater part of the burden.

(4) What is the proper relationship of Congress to a peanut program once it is in operation? The past twenty years have demonstrated repeatedly that Congress is reluctant to let the Secretary of Agriculture exercise the responsibility which it has itself vested in him and has instead taken an active part in the determination of minor policy questions. Seldom a year goes by that Congress by legislative action does not set aside or add a provision or two of the then current

[14] Remarks of Stephen Pace, before the Peanut Meeting, Jefferson Auditorium, Washington, D. C., January 31, 1952 (mimeographed publication of the Department of Agriculture), p. 5.

[15] Franklin D. Roosevelt, Topeka Speech, September, 1932, quoted in Nourse *et al.*, *op. cit.*, p. 16.

peanut program. Often the result is that the Department of Agriculture hesitates to take action and leadership when it should. The responsibility of the Department of Agriculture and the responsibility of Congress for the various provisions of the program need to be made clear.

Finally it remains to be demonstrated that the peanut programs as conceived and executed have really been appropriate for the ends they are designed to serve. It has not yet been proved that acreage restriction and price support do in fact point toward a solution of the peanut industry's basic problem, over-production. The traditional approach in all farm programs since 1932 has been to cut down on production to bring it in line with demand, whereas it may be that the only feasible long-run solution to the peanut problem, assuming the number of persons who desire to raise peanuts and the number of acres devoted to their production remain pretty much the same, is to attempt to solve it from the other end, namely, by trying to get demand to meet supply. Rather than restriction, a sustained attempt to expand the market for peanuts may well be the answer.

Certainly more peanuts could be eaten than now are. Steps might be taken to expand the edible market. Peanut oil, which is now relatively unimportant in comparison with other vegetable oils, might also be much more widely utilized than it is now. Peanuts have a "high oil content, approximately 600 pounds of oil to the ton. . . . In areas suited to their production, peanuts usually produce at least twice as much oil per acre as any other generally grown commercial crop. The oil has been used principally for food . . . but . . . it can be . . . used in making explosives, anti-freeze, medicines and other vital products."[17] Other uses for peanut oil might be discovered, and if a steady supply of peanuts for oil could be assured, there are great possibilities for increased use of peanuts along this line. Steps might be taken to search out new uses of peanut oil and to expand its use. Finally, it seems possible that there are as yet undeveloped uses of peanuts in industry. Recently an experiment was conducted with some degree of success in Great Britain of making a fabric partly of peanuts, and as the science of chemurgy is further developed, still other uses might be found. Steps might be taken to augment the industrial use of peanuts.

All possibilities of expansion as an alternative to continued government support might well be studied. As one student of the problem put it,

> There will come a time when the nation must make a choice between restricted and abundant production. The choice may lie between making it profitable for farmers to make use of their tremendous productive power or shutting down part of it to bolster prices. . . . A major determining factor in making this choice undoubtedly will be the ability of research institutions to discover ways of making farming profitable, to find means of utilizing whatever farmers can grow. . . .[18]

If this is true of agriculture as a whole, it is especially true of the peanut industry.

[17] Remarks of G. W. Ray before the Fourth Annual South Carolina Chemurgic Conference, Columbia, S. C., April 24, 1942.

[18] Ferdie Deering, *USDA, Manager of American Agriculture* (Norman, Okla.: University of Oklahoma Press, 1945), p. 82.

III

The answers to such questions as these must be framed within an understanding of several general facts. First of all, the peanut program today suffers from its depression-born background. The first programs were instituted as anti-depression measures, at a time when the position of the peanut industry was precarious, to say the least. To this day, that negative approach sets the tone of peanut programs. Is such an approach the correct one in days of more widespread prosperity? A plan designed to aid the peanut industry over the hump in case of general economic collapse, as a part of a series of governmental measures, is one thing. Permanently holding peanut farmers on a government-supported economic plane is another. Is there any more reason for the latter, asks one student of farm programs, than "there is to pay a Main Street merchant a dole to keep him in business because his rent is higher than that of his competitor in the next block?"[19] A more reasonable approach might be to set up an adjustment program for peanuts on a stand-by rather than a permanent basis, to become fully active only in periods of urgent need. The peanut industry stands on firmer ground than it did when programs were first initiated for them, and a positive approach, more in line with the times, one which emphasizes creating markets and expanding uses, might be a better basis for government activity in relation to peanuts than the present one.

Secondly, the peanut program is affected by the impact of the war years on the industry. Then the government induced growers to expand production to unprecedented heights by dangling a fistfull of carrots before them. Certainly 90 per cent of parity was pretty widely considered as an emergency measure only. When victory came, the need for such a volume of peanuts fell off sharply, and the justification for government inducements was erased. During the period of transition from war, however, pressures for them continued to be manifested in Congress, and the result has been high level, artificial support long after war-born needs were gone. Having had so long an experience with that kind of program—from 1941 to the present, virtually—it is now difficult to frame realistic peanut programs. People in the industry have come to expect governmental coaxing, and policy makers have become used to offering it. An analysis of the facts, however, might make it apparent that such a base is false, and that for the long-run good of the industry, government activities might better be altered to fit circumstances. Fostering research into peanut uses and attempts to revive foreign trade by reversing the downward trend of peanut exports for the last two decades might turn out to be much more revivifying for the whole peanut industry than the continuation of price support programs.

Thirdly, programs for peanuts are not so much the result of calm, dispassionate study as they are of the efforts of a few peanut champions. They serve to guarantee the highest prices for their product which representatives of the producers, using all their parliamentary skill and influence, have been able to squeeze out of Congress. They are not, as they should be, soundly conceived plans, carefully

[19] *Ibid.*, p. 211.

integrated into the over-all economic development of the United States. This is not the place to discuss agricultural pressures on Congress and its response to them, but it may be the place to suggest that future peanut programs be brought into line with planning for the economy as a whole.

Even the most conservative economists and students of American life agree that "the increasing requirements of our growing population for food, fiber and agricultural products . . . [add] responsibilities of government" and that they call for "the development of programs which will safeguard our resources and will amply provide our population with the agricultural commodities it requires at prices that will preserve for agriculture a sound position in our economy."[20] The question to be answered in regard to peanut programs is whether they are of that nature. There is reason to doubt that they are. Based on restriction and high-level prices, they injure consumer interests, because consumers cannot buy as many peanut products as they could if there were greater production; they do not promote the long-run interests of producers of peanuts both because they run counter to the farmers' basic desire to produce for the market and because farmers themselves must eventually bear their share of the cost; and they are hard on the shellers and end-users of peanuts, because they offer only an ever-restricting field of operation in which to work, with the result that shellers go out of business, and cashew patties replace peanut bars. Peanut programs to date have been based on a philosophy of scarcity, which has no place in our present economy. They might better be shaped around the needs of the future than be accepted as a legacy from the past. Serious study and effort need to be devoted in the near future to these government programs to put then in step with new developments in technology, current trends in the market, and our national aspirations to economic stability.

[20] *Agricultural Functions and Organization in the United States.* A Report of the Commission on Organization of the Executive Branch of the Government (The Hoover Commission) (Washington: Government Printing Office, 1949), p. xiii.

WAGES AND THE ALLOCATION OF EMPLOYMENT

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THE THEORETICAL VIEW

Fundamentally, wages have two functions: (1) to allocate productive resources; and (2) to provide the incentive to work which is necessary in a free society. Wages, as one price within a price system, share these functions with other factor-prices. Labor reacts to wage differentials by moving to the jobs offering the most favorable terms and conditions. Workers compare alternative jobs and choose the ones which are superior. We assume implicitly that workers are rational and concerned basically with improving their material position.

The *specific* employment of the nation's labor force involves its allocation on two levels: (1) among labor markets; and (2) within given labor market areas. The former involves the geographical location of the nation's employment. The latter involves the location of the nation's employment as among industries, firms, and skills or occupations.

This distinction is necessary because a truly national labor market is lacking in the United States. This is true despite the relatively high degree of labor mobility characterizing our country. Though significant, this mobility is insufficient to avoid the existence of a number of local labor markets. Considerable segments of the labor force resist changes in location for various reasons, viz., (1) the cost of relocating, (2) inertia and fear of the unknown, (3) lack of knowledge of the alternative opportunities in other labor market areas, and (4) attachment to the area of one's birth and social and family contacts.

Geographical Location

Geographic wage differentials exist in the United States. The economic reasons underlying them are: (1) different ratios of labor to capital in various labor market areas; (2) varying population growth rates; and (3) different capital formation capacities. As a consequence of these differences, there will be unemployment (idleness) and underemployment (inefficient employment) of labor in certain market areas, simultaneously with shortages in others.

A reallocation of labor and capital is, therefore, desirable. The wage-price is our economic instrument for the allocation of labor. Since wages is the basic cost of production, geographic wage differentials involve geographic cost-price differentials, thereby influencing the attractiveness of investment. Geographic wage differentials tend to attract labor to capital, and capital to labor. Such differentials appear necessary as a consequence of continuing variations, among the different areas, in population growth and capital formation capacity. They are necessary to overcome the economic, psychological, and social costs of relocation. We have noted above the costs which cause labor to resist moving. Geographic wage differentials act to overcome these reasons against movement.

In a 1951 supplement to the *Survey of Current Business*, entitled *Regional Trends in the United States Economy*, the United States Department of Commerce supported the above observations. The department noted[1] that, in the past two decades, economic differences among the several regions of the United States have become relatively less pronounced, due to the freedom with which population and capital can move from region to region. Consider, for example, the growth of per capita incomes in the Middle East and the Southeast. In order for the rate of increase between 1929 and 1949 to have been in both regions the same as the national average—or 96 per cent—the amount added over this period to 1929 per capita income would have had to be $889 in the Middle East and in the Southeast $330. However, *as long as workers were free to leave the Southeast in order to look for higher incomes, elsewhere—and as long as capital was free to flow in greater volume to the Southeast in search of lower costs of production—the discrepancy between $889 and $330 was too large to be maintained in a free and expanding economy.* Because of these factors, the actual increase in per capita incomes in the Middle East was $639 compared to $538 in the Southeast. But the $538 increase in the Southeast was a much larger percentage advance than the $639 increase in the Middle East. Consequently, regional incomes tended to be leveled.

Another example, more specific, of the relationship between wages and the geographical location of employment, is provided by George P. Shultz's study of the Brockton shoe industry.[2] Shultz explained[3] that his evidence *indicated that unemployment, the quantity axis of wage decisions, had been an effective pressure within the union.* Particularly in preparation for bidding on Army orders in 1940, *the union adjusted wage rates in an effort to increase the volume of employment in Brockton.*

Industrial Location

Our economy is dynamic, reflecting changes in tastes, as well as innovations. Industries grow and die. Consequently, the demand for labor in a given industry may be expanding or contracting. If the former is the case, labor must be attracted from those industries which are declining. Wage differentials are the basic instrument of our economic system for effecting this reallocation of labor. Such differentials reflect, in part, an expanding or declining demand. They are, consequently, performing a vital function. In this connection, it must be recognized that the magnitudes of the differentials may have to be substantial to affect a reallocation of labor. Further, it is necessary to consider the differentials labor *expects* as well as the *actual* differentials. Expectation may vary significantly from actuality.

We have been using the term wage differential with the implication that it

[1] *Regional Trends in the United States Economy*, 1951 supplement to the *Survey of Current Business*, U. S. Department of Commerce, pp. 1, 2, 4, 7.

[2] George P. Shultz, *Pressures on Wage Decisions*, Technology Press of M.I.T. and John Wiley and Sons, New York, 1951.

[3] *Ibid.*, pp. 73, 74.

covered only variations in money wages. This is inaccurate. The opportunity costs (alternative opportunities) of labor are assessed on a more extensive basis than mere comparisons of money wages. Security, hazard, prestige, pleasantness of surroundings (attitudes of one's fellows and superiors as well as the physical workplace), discipline, vacations, sick leave, rest periods, pension and welfare benefits—all these enter the scales and influence the costs of labor. They will, therefore, exercise an influence on the level and slope (elasticity) of the labor supply curve.

Location by Firm

Firms expand or decline. The former must attract labor from the latter. Generally, the expanding firms will be those which are more efficient. Efficiency includes intelligent financing as well as technical competence in production arrangements. Greater efficiency involves lower unit costs, with consequent stimulation of the individual firm's demand for labor. Efficient firms will outbid the inefficient ones for labor. Competitive bidding involves wage differentials, although theoretically these differentials would disappear with the achievement of an equilibrium between the demand for and supply of labor in the market. Of course, in a dynamic market, demand and supply conditions do not remain static long enough for a long-run equilibrium to be achieved. Usually, equilibrium is something towards which there is a tendency, rather than something which is achieved. Therefore, wage differentials are to be expected as a normal market phenomenon.

Location by Skill or Occupation

The more skilled an occupation is, the greater the *time* and *effort* required for its mastery. The expenditure of *effort* necessary to become technically competent involves disutility (human cost). The learning effort involves also the passage of time. There is a more subtle disutility (human cost) involved in this connection. When a worker spends a portion of his life in training for a skill or occupation, he foregoes immediate pleasures for those more remote in time. These disutilities (human costs) must be offset by more attractive compensation, in order to induce free men to expend time and effort. Any generalization concerning the disutilities involved in training should consider also individual differences in (1) preference to undergo training, (2) estimation of *expected* yield as a result of the training, (3) financial ability or willingness to undergo training, (4) preferences among occupations for which training is necessary, and (5) the differential force exerted by changes in the partial and total economic environment.[4]

As an example, the *New York Times* reported in November 1952 a shortage of apprentice tool makers.[5] The newspaper stated: "Semi-skilled workers on a production line do better in terms of take-home pay than apprentices looking

[4] Louis R. Salkever, "Toward a Theory of Wage Structure," *Industrial and Labor Relations Review*, vol. 6, no. 3, April 1953, p. 308.

[5] *New York Times*, November 23, 1952.

ahead to becoming master machinist or tool designers. That is why there is a shortage of apprentices. It is why there are few young men willing to start the long road to becoming a skilled tool worker."

It is interesting that the Soviet Union has long recognized the importance of wage differentials as an inducement for workers to attain higher levels of skill. In an important speech at a meeting of factory managers in June 1931, Stalin said:[6]

> . . . in a number of establishments the wage rates are established in such a manner that the difference almost disappears between qualified labor and unqualified labor, between heavy labor and light labor. Equalitarianism leads to this, that the unqualified (unskilled) laborer is not interested in becoming a qualified laborer. . . . We cannot tolerate a situation where a railway locomotive driver earns only as much as a copy clerk. . . . We must give the unskilled worker a stimulus and prospect of advancement, of rising to a higher position. . . . It is necessary to organize such a system of wage scales as will take into account the difference between qualified labor and unqualified labor, between heavy labor and light labor. . . . Marx and Lenin say that the difference between qualified and unqualified work will exist even under socialism, even after the destruction of classes. . . . Who is right—Marx and Lenin or the equalitarians?

MOBILITY STUDIES

Here and there, in the above discussion, we have presented evidence concerning the wage-employment allocation relationship. In this section, we bring together some available evidence of the relationship on a more ambitious scale. Since allocation involves movement, we are concerned with mobility. More specifically, we are concerned with these types of mobility: region to region, industry to industry, firm to firm, and skill level to skill level. It must be understood, in this connection, that there is a difference between the *inclination (propensity) to move* and *actual movement*. Opportunity must be coupled with willingness before any actual movement will occur.

Mobility of the American Labor Force

We have noted already the geographical mobility of the American labor force, by commenting on the significant movement from the Southeastern portion of the United States since 1929.

In a report entitled "Job Tenure of American Workers," the Bureau of Labor Statistics made a more sweeping observation when it said:[7] "Mobility always has been a major characteristic of the American labor force. Changes from one occupation or industry to another have been accompanied by extensive geographical shifts and appear to form a common pattern in the working lives of substantial numbers of people."

In this same report, which was based on a survey by the Bureau of the Census of the United States Department of Commerce, the Bureau of Labor Statistics

[6] Abram Bergson, *Structure of Soviet Wages*, Harvard University Press, Cambridge, 1944, p. 178.

[7] *Monthly Labor Review*, vol. 75, no. 3, September 1952, p. 257.

TABLE 1[1]

Experience of Workers at their Current Jobs, by Major Occupation Group and Sex, January 1951

OCCUPATION	PER CENT WITH JOBS ACQUIRED BEFORE WORLD WAR II			MEDIAN YEARS ON CURRENT JOB		
	Total	Men	Women	Total	Men	Women
All Employed Persons	22.0	25.4	13.9	3.4	3.9	2.2
Farmers and Farm Managers	50.0	50.4	42.4	9.4	9.6	7.1
Managers, Officials, Proprietors, except farm	33.0	34.9	22.7	5.1	5.3	4.2
Craftsmen, foremen, and kindred workers	27.9	28.2	20.2	4.3	4.3	4.2
Professional, technical, and kindred workers	24.9	27.8	20.3	3.7	4.3	2.5
Clerical and kindred workers	17.4	25.7	12.7	2.9	3.9	2.5
Operatives and kindred workers	16.9	18.7	12.4	2.9	3.1	2.3
Farm laborers and foremen	18.2	9.7	33.9	2.7	2.4	4.8
Sales Workers	14.0	16.2	10.3	2.2	2.6	1.6
Service workers, except household	14.1	19.2	7.9	2.0	2.9	1.2
Laborers, except farm	11.6	11.6	—	1.6	1.6	—
Private household workers	10.2	—	10.2	1.2	—	1.2

analyzed the job stability of the American labor force. It did so in the belief that job shifting (mobility) can be gauged effectively by the extent to which workers remain on the same job for long periods of time. The Census survey found that 13 million of the 59 million civilian workers employed in January 1951 had been with the same employer continuously since November 1941 or earlier. In other words, more than a fifth of the workers employed at the time of the survey were still working in the same jobs they had prior to Pearl Harbor and the beginning of World War II. Thus, a significantly large proportion of workers remained with the same employer or business despite the war and postwar (including Korea) dislocations, notwithstanding the mass movement of men into and out of the Armed Forces and of women into and out of the labor force, and in the face of the extensive variations in industrial demand of the past decade. *The corollary must also be noted: the labor force was extremely mobile. In the total, job tenure was less marked than job shifting.*

The January 1951 total includes many persons who could not possibly have had a continuous job for 9 or more years simply because of their age. It also includes many men who involuntarily interrupted their job holding, by entry into the Armed Forces. The proportion with long-term job tenure, calculated on a base consisting of those with continuous labor-force participation throughout this period, would therefore be considerably higher.

This study concluded that the most mobile segments of the American labor force are to be found in these groups: (1) the young (under 45 years of age);

[1] *Monthly Labor Review*, vol. 75, no. 3., *op. cit.*, p. 261.

(2) the unskilled; (3) the industries in which seniority is not so important, or in which employment conditions are less stable; and (4) the non-whites. Conversely, the most stable segments of the American labor force are to be found in these groups: (1) the older workers (over 45 years of age); (2) the semiskilled, managerial, and self-employed persons; (3) the industries in which seniority is important or in which employment conditions are stable; and (4) the whites. The major reason for the disparity between whites and non-whites is the greater concentration of non-white jobs in casual or part-time work and in occupations with characteristically lower job stability.

Mobility of Tool and Die Makers

We noted: (1) that skilled workers are less mobile than semiskilled or unskilled; and (2) that a shortage of skilled tool makers characterized the Korean "police" period. Therefore, a study of the mobility of tool and die makers, *with special attention to the importance of economic considerations in choice of occupation and job changes*, should be of special interest. Such a study, covering the period 1940–1951, was made by the Bureau of Labor Statistics for the Department of the Air Force.[9] The study is based primarily on the analysis of 11-year work histories (1940–1951), obtained by personal interviews in the spring of 1951 with 1,712 tool and die makers.

The precision which tool and die making demands requires a high degree of skill, which is obtained by four or more years of training or experience. Qualified tool and die makers are at the top of the occupational ladder. They are among the highest paid workers in the metalworking field.

The survey analyzed four types of movement by tool and die makers: (I) movement in and out of the occupation; (II) movement between employers; (III) movement between industries; and (IV) movement from one geographic area to another.

I. *Movement in and out of the Occupation*

During the 11-year period, there was very little movement in and out of the occupation. *After becoming qualified journeymen*, more than 90 per cent of the group surveyed worked only as tool and die makers.[10]

II. *Movement between Employers*

All of the industry and geographic shifts made by the workers included in the study, as well as most of the moves in and out of the occupation, involved changes of employer. Measurement of movement between employers was, therefore, a comprehensive measurement of all movement.

[9] *The Mobility of Tool and Die Makers, 1940–1951*, U.S. Department of Labor, Bureau of Labor Statistics, Bulletin No. 1120, November 14, 1952.

[10] *Ibid.*, p. 32. The work histories of these men began only after they became qualified journeymen. The occupational movement involving a skill progression up to tool and die maker was considered in this study as part of the training experience for the trade, but it *was excluded from the measurement of mobility of fully qualified members of this craft.*

Nearly three-fifths (979 of the 1,712 workers in the survey) had worked for only one employer. The 733 tool and die makers who had changed employers one or more times made 2,127 moves, or an average of 2.9 per person. More than half of those who had shifted made only one or two moves. *Three-fifths of the movement between employers was made by 229 workers (about one-seventh of the total number of workers in the survey) who made four or more shifts each. Thus, tool and die makers, as a group, were relatively immobile. However, within the group, there was a rather mobile minority.*[11]

Of the 733 tool and die makers who had made employer shifts, 605 (82.5 per cent) had made at least one voluntary move. About two-thirds (1,258) of the 2,127 moves between employers were voluntary. If the frequency of voluntary movement between employers of the estimated 100,000 tool and die makers employed in early 1952 was the same as was found for the 1,712 craftsmen in the survey sample, it is estimated that about 9,000 voluntary employer shifts would be made annually by the tool and die makers in the country. Most of the job changes would involve a change of industry, but less than 12 per cent of the shifts would involve a change of employment from one labor market to another. Of course, 9,000 job changes does not mean that 9,000 different craftsmen would change employers. A small number of men would change jobs more than once during a given year.[12]

Workers with fewer months in the labor force *after qualifying as tool and die makers* made proportionately more job changes in relation to the length of their work experience. While age differences were an important factor, there were differences even for workers in the same age group. *The relationship between months in the labor force and degree of mobility tends to substantiate the belief that when workers enter the labor market, either as new workers, or as in this case, as new journeymen, they look for "good" jobs. In this search they move from job to job until they find one that satisfies their requirements, and once they obtain such a position, they are likely to remain there.*[13]

III. *Movement between Industries*

There appeared to be a significant degree of interindustry movement. Slightly more than a quarter of the workers employed in the machinery and motor vehicles industry had changed employers. Also, more than half the workers employed in the aircraft industry and about two-thirds of those working in the machine tool accessories industry had changed jobs during the period. Although the average age of the workers differed by industry and was to some extent a factor, the interindustry differences in mobility still appeared when age was held constant. These differences may be partially explained by the nature of the industries, particularly their recent growth and the degree to which employment has fluctuated. For example, only about half the tool and die makers employed in the machine tool accessories industry had qualified as tool and die makers in that industry. Thus, the other 50 per cent would necessarily

[11] *Ibid.*, p. 33.
[12] *Ibid.*, pp. 33, 34.
[13] *Ibid.*, p. 36.

have made at least one job (and industry) move in order to be employed in a machine tool accessories plant.[14]

IV. *Movement from one Geographic area to another*

There was relatively little movement from one geographic area to another. Only 143 (8.4 per cent) of the 1,712 men reported changing their cities of employment during the 11 years. These men made only 250 such shifts in job location or an average of 1.7 moves each. Nearly half of those who had changed their cities of employment moved only once, and five-sixths had made only one or two locational moves.[15]

The tool and die makers interviewed were asked to give their reasons for changing jobs. The information called for the entire explanation for changing employers, including both the reason for leaving a particular job and for taking the next one. The reasons given were divided into two broad groups: voluntary job changes and involuntary job changes. The results are contained in Table 2.

Of the 2,127 job changes 1,258 were voluntary and 675 were involuntary. In 194 cases the workers gave no reason or the reason was so vague as to be unclassifiable. Of the changes made voluntarily, the reason given most frequently was the desire for higher pay (27.5 per cent), including a higher wage rate or higher take-home pay because of a longer workweek. The next largest category (24.9 per cent) of all voluntary job changes covered a variety of responses which could be summed up as a desire to get a "better job." This included such reasons as "to gain experience," "to get a promotion," or "to take

TABLE 2[16]

Job Changes of Tool and Die Makers, by Nature of Change and Reason for Voluntary Changes, 1940–1951

JOB CHANGES	PERIOD OF CHANGE (1940–1951)	
	Number	Per cent
All Job Changes	2,127	100.0
Voluntary	1,258	59.1
Involuntary	675	31.7
Reason not reported	194	9.2
Voluntary changes	1,258	100.0
Better Pay	—	27.5
Better Job	—	24.9
Working Conditions	—	11.6
Location	—	5.1
Return to Former Employer	—	5.0
Differences with Foreman	—	3.3
Other	—	22.6

[14] *Ibid.*, p. 37.
[15] *Ibid.*, p. 39.
[16] *Ibid.*, p. 41.

a job which would lead to promotion." The desire to improve working conditions accounted for 11.6 per cent of the voluntary job changes made. Included in this group were changes made to secure different work shifts, more desirable hours of work, or better physical conditions in the tool room or shop. 5.1 per cent of the voluntary job changes were made because of plant location or transportation difficulties. Five per cent of the workers left jobs to return to plants from which, in most cases, they had been laid off. 3.3 per cent of the voluntary job changes were made because of "differences" with supervisors. In 22.6 per cent of the voluntary job changes, vague reasons or reasons not related to a particular job were given.[17]

Commenting upon these results, the Bureau of Labor Statistics observed:[18] "The above enumeration of reasons for changing jobs suggest the important conclusion that *most of the voluntary movement of tool and die makers was for specific and rational reasons calculated to improve the worker's job situation.*" (Italics added.)

Each worker was asked to identify the influences leading him to this occupation. 1,287, or 75.2 per cent of the 1,712 workers surveyed,[19] cited these three major reasons: (I) 621 said they became tool and die makers because they were mechanically inclined and *had looked for an occupation in which they could use their aptitudes*; (II) 384 reported entering the occupation because of the *advice or example of their families or friends*; (III) 282 reported entering the trade because *they expected it to provide them a good income at once or in the immediate future.*

The first and third reasons appear to be rational decisions associated with economic betterment. They account for 903 (70.2 per cent) of the 1,287 tool and die makers able to provide definite reasons for entering the occupation. Further, there is a strong likelihood that the influence of family and friends was exerted in connection with the argument that entry into the occupation was economically advantageous. The basic *conclusion* is: *Rational economic factors have been most potent in influencing tool and die makers: (1) to enter the occupation; and (2) to change jobs.*

Patterns of Mobility, Skilled Workers, Six Cities[20]

This study is based primarily on an analysis of 10-year work histories obtained in interviews with a sample of 2,578 male skilled workers who were employed during 1950 in six large cities. The sample includes not only workers who were on skilled jobs in 1950, but also those who held a skilled job sometime during 1940–50.

As a part of the 10-year work history collected for this study, a direct question was asked the worker about each job he left, "Why did you leave that job?"

[17] *Ibid.*, p. 42.
[18] *Ibid.*, p. 42.
[19] *Ibid.*, p. 24.
[20] *Patterns of Mobility of Skilled Workers and Factors Affecting Their Occupational Choice Six Cities, 1940–51*, Survey of Occupational Mobility Conducted by Cooperating University Research Centers and the Social Science Research Council for the U.S. Department of the Air Force and U. S. Bureau of the Census, Industrial Relations Section, Massachusetts Institute of Technology, Cambridge, Mass., February 1, 1952, mimeographed.

TABLE 3[21]

Specific Reason for Shifts, 1940–50

SPECIFIC REASON FOR SHIFT	WEIGHTED PER CENT (ROUNDED)
a. *Voluntary Reasons*	*48*
1. Wages	7
2. Chance for Improvement	9
3. Going into own Business	3
4. Physical characteristics	4
5. Fairness of Treatment	4
6. Independence and control	0
7. Steadiness of Employment	2
8. Wanted a Change	1
9. Emigration to U.S.A.	0
10. General dissatisfaction with job or occupation	3
11. Nearness to home	1
12. Other voluntary reasons	7
13. Went into defense work	3
14. Wanted a geographical shift, just "moved" to a city	4
b. *Involuntary Reasons*	*51*
1. Economic reasons (layoffs)	33
2. Personal reasons	2
3. Health reasons	4
4. Discharge	1
5. Other involuntary reasons	1
6. Military Service	8
7. Unclassified reasons	2

For the purpose of analyzing the positive motivations of workers in leaving jobs, it is the voluntary shifts that are of interest to us. We must proceed with caution in interpreting these data, for the problem of motivation is a deep one and the data are based on only brief interviews. Further, previous studies have shown that no fixed scale of "job satisfactions" can be drawn. The worker's response may thus be expected to change as his personal or community environment changes.

With these qualifications in mind, the reasons for voluntary job shifts, as given by the skilled workers in the sample, revealed *two main points:* (1) the *"economic" factors, "wages" and "chance for improvement," represented the most important grouping of reasons, accounting for one-third of the voluntary shifts; and* (2) *the so-called "human relations" factors, "fairness of treatment" and "independence and control," were relatively unimportant (4 per cent of the voluntary reasons).* (Table 3.[22])

This statement about the importance of "economic" motives may be challenged on the grounds that the shifts for these reasons may have resulted in no greater wage gain during this period of full employment than the shifts

[21] *Ibid.*, p. 50.

[22] It must be kept in mind that 51 per cent of the reasons for shifting jobs were *involuntary*.

TABLE 4[22]

Per Cent Wage Change on Job Shifts for Reasons of "Wage" or "Chance for Advancement" as Compared with "Layoffs"

PER CENT WAGE CHANGE	WAGES AND CHANCE FOR ADVANCEMENT, PER CENT	LAYOFFS, PER CENT
No Wage Change	8	19
1–10% Increase	11	9
10–30% Increase	21	10
Over 30% Increase	33	9
1–10% Decrease	4	7
Over 10% Decrease	14	25
No Information	9	22
Total	100	100

that followed layoffs. Thus, other studies have found that workers' knowledge of alternative jobs was slight and that there was no particular tendency for movement toward the higher wage firms. In order to check on this point, this study compared the percentage wage changes resulting fror voluntary shifts for "wage" and "chance for advancement" reasons with involuntary shifts resulting from layoffs. (Table 4.)

A marked difference between these two groups is apparent: 65 per cent of the former group increased their wages whereas only 28 per cent of the latter group secured an increase in wages. These data must, of course, be accepted with caution, for they are based on unverified statements by the individual workers. Nevertheless, this particular result seems pronounced enough to warrant confidence in its validity. Combining it with the apparent importance of "economic" motivations cited above, *we may advance this evidence as confirming, at least, the finding of other studies that skilled workers are relatively purposeful and rational, in an economic sense, as they behave in the labor market.*

Another direct question was put to the skilled worker by the interviewer. After collecting a 10-year work history, the interviewer selected the job held longest during the period from 1945–1950. The worker was then asked, "You spent the most time as ——— during the last five years. Why did you go into this kind of work?" Some of the answers will be related to an occupation that is not skilled, since the length of time in the skilled trade and the date of entry vary within the group analyzed. Such cases are not considered in the following discussion.

These craftsmen apparently felt a natural aptitude and liking for what they considered to be interesting work. They were often encouraged in this feeling by a father, an uncle, or some other relative. (Table 5.)

The fact that such direct economic factors as wages and chance for advancement were not emphasized by a large proportion of these skilled workers raises

[22] *Ibid.*, p. 53.

TABLE 5[34]

Reason for Choosing Skilled Occupation held Longest since January 1, 1945

(Percentage totals do not equal 100 because of rounding)

REASON	PER CENT
a. *Job-Oriented Reasons*	*22*
1. Wages	2
2. Proximity to home	0
3. Physical characteristics of job	1
4. "Like the work"	1
5. Security	1
6. Anticipation of Advancement	0
7. Independence and Control	0
8. Influence of relatives	1
9. Assistance of relatives and friends	3
10. Job scarcity	3
11. Chance	5
12. Promotion	3
13. Special training	0
14. Other, unclassified	2
b. *Occupation-Oriented Reasons*	*53*
1. Wages	5
2. Job Interest and feeling of aptitude	13
3. Physical Characteristics of occupation	2
4. "Like the trade"	8
5. Security	1
6. Anticipation of advancement	2
7. Independence and control	0
8. Influence of relatives	6
9. Job scarcity	1
10. Chance	3
11. Special training	6
12. Informal training	3
13. Other, unclassified	3
c. *No information or not applicable*	*23*
Total	98

a further question of interpretation. Does this mean that the economic motive was not an important consideration in the choice of a skilled trade? Such a conclusion seems unwarranted. Material presented earlier on reasons for job shifts showed that many voluntary shifts were made for "wage" or "chance for improvement" reasons. Thus, the emphasis placed on direct economic factors as explanations for job to job movement indicates their basic importance. Since skilled jobs are generally thought of among wage earners as at the top of the economic ladder, it would seem likely that this fact and its general im-

[34] *Ibid.*, p. 57.

portance was assumed by those explaining their occupational choice. At the very least, one should not conclude from these data that the economic attractions of skilled jobs were unimportant factors in the choice of skilled occupations.

The Movement of Factory Workers

In a study bearing the above title, Charles A. Myers and W. Rupert Maclaurin reported their observations of the operation of a local labor market in a medium-sized Massachusetts manufacturing community. Their investigation concerned the employment experience of 1,500 workers who moved between 37 principal manufacturing and public utility firms in the community during 1937, 1938, and 1939. All the firms still in business in the summer of 1942 were interviewed again to provide comparative data and information on the 1942 labor market.

Attention was focused on the extent to which workers moved *voluntarily* or *were forced to move* from one firm to another or in and out of employment during this period, and the effect of this movement. Myers and Maclaurin sought to answer these questions: (1) How much inter-factory movement took place within the community? (2) What was the nature of that movement; who were the people that moved? (3) What were the principal barriers to movement between local firms? (4) Did the movement of workers fulfill its functions of (a) equalizing wages and other conditions of work for comparable jobs, (b) distributing labor where the need was greatest, and (c) enabling workers to better themselves and to learn new occupations?[25]

The study covered the period 1937–1942, involving substantial unemployment (1937–1939) and growing labor shortages (1942). The fact that there was a labor surplus during most of this period is important. It establishes an important distinction between this study and those discussed earlier.[26]

Myers and Maclaurin summarized their principal findings as follows:

I. Only a small proportion of the total movement of workers during 1937–39 took place among the principal factories of the community.

II. Less than 30 per cent of the moves among the 37 firms in 1937–39 were voluntary, and 70 per cent were forced by layoffs and discharges. Thus only a small group of workers were willing or able to quit their jobs because they were dissatisfied or because they hoped to "better themselves." Forced movements were still predominant in the wartime labor market of 1942.

III. There was a strong tendency for workers to move between industries and firms located in the same neighborhood. Some movement occurred in the direction of higher-wage firms, although it was not very great.

IV. The workers who moved *voluntarily* were mostly young, short-service

[25] Charles A. Myers and W. Rupert Maclaurin, *The Movement of Factory Workers*, John Wiley and Sons, New York, 1943, pp. 70–76.

[26] The authors note that an important limitation of the study is the fact that the data provided very little information on the experience of three groups of workers: (1) those factory workers who took non-factory jobs or were unemployed after leaving a factory, (2) those who remained with one employer after entering the manufacturing labor market late in 1937, 1938, or 1939, and (3) those who were not employed at any time during the period in the principal manufacturing firms. If complete information had been available on these workers, the conclusions on movement might have been modified.

workers, frequently women, whose earnings were relatively low in the job they quit. These workers had less to lose by moving than did the older, longer-service workers who held the better-paying jobs. Forced movements were also concentrated on the young, short-service workers, since even the non-union firms gave considerable weight to length of service in making layoffs.

V. Despite labor surpluses and differences in skill requirements between industries, many more workers could have moved than actually did, if it had not been for certain other barriers to free movement of workers within the labor market. On the demand side, there was a gentleman's agreement among employers not to hire labor away from each other. Employers also had certain other restrictive hiring practices which limited movement to particular groups of workers.

VI. On the supply side of the labor market, there were non-competitive practices which likewise constituted barriers to movement. Workers tended to seek and accept jobs within their immediate neighborhoods, largely because they learned of openings or secured jobs through the influence of employed friends and relatives. Long service and attachment to the job or firm was another factor limiting movement in response to immediate financial incentives. Unionism and unemployment compensation had little direct influence on movement in the period studied.

VII. Movement from lower-wage to higher-wage firms was largely ineffective in reducing differentials in rates for comparable jobs. Increases by the lower-wage firms between 1937 and 1942 were brought about more by minimum-wage orders and the pressure of unions than by voluntary movement away from these firms. Higher-wage firms also made increases, thus leaving the ranking of firms in the community's wage structure unchanged, for the most part.

VIII. The low-wage firms generally did not compensate for their poorer wage rates by providing better working conditions, welfare plans, or good "informal relations."

IX. Because of the various barriers to movement, the high-wage, expanding firms probably did not succeed in getting the best working force that could be obtained. On the other hand, there was probably sufficient movement among the workers in the sample to prevent the development of a "hard core" of unemployment during 1937–39.

X. Movement between the principal factories was not successful in giving workers an opportunity to utilize their capacities and abilities as effectively as possible. The fact that more than a third of the voluntary moves during 1937–39 resulted in lower earnings, and frequently some unemployment, indicates that voluntary movement was not too intelligent and often disappointing to the workers.

The above conclusions appear to undermine our earlier evidence relative to differentials and the rational allocation of employment. Before we discard that evidence, however, we must recall that these conclusions related to a period of labor surplus. Thus, Myers and Maclaurin observed:[27] "The pressure

[27] *Ibid.*, p. 74.

on some firms to get and hold workers late in 1942, however, had forced certain changes which were in contrast with the 1937–39 period." They noted these significant changes:

I. There was a stronger tendency for workers to move from the lower-wage to higher-wage firms. All the low-wage firms were losing workers in 1942; whereas only four-fifths were losing workers in 1937.

II. The attraction of war jobs with better wages was overcoming somewhat the attachment of workers to neighborhood firms and industries.

III. The willingness of workers to move voluntarily, and hence the potential amount of voluntary movement, was great. For example, nearly a fourth of the community's labor force, most of whom were already employed, applied for jobs with a large firm which acquired a plant in the community early in 1942. This firm was known for its good wages and personnel policies.

IV. Employers with war contracts observed the "gentleman's agreement" with other war plants, but not with non-war employers. Some firms modified it further to accept any applicant who said he had quit his job in another war plant.

On balance, therefore, our earlier evidence and reasoning retain vitality. The Myers and Maclaurin study, however, introduces a warning note relative to periods of severe unemployment. At such times, level of employment problems may overwhelm the effective functioning of wages as a basic instrument for securing the rational and effective allocation of employment.

A New England Textile City

In *The Dynamics of a Labor Market*, Charles A. Myers and George P. Shultz reported the results of their study of a medium-sized (35,000) New England community, which had suffered a partial mill shutdown that resulted in considerable unemployment. The textile mill had been the dominant employer in the community for over a century. Occurring in 1948, the partial mill shutdown was accompanied in 1949 by layoffs in other local industries. Amidst a general atmosphere of business recession, the local labor force suffered its peak unemployment of about 12 per cent in April 1949.[28]

In making the study, Myers and Shultz sought answers to these questions: (1) How do displaced workers look for and find new jobs? (2) What part is played by unemployment benefits and by the State Employment Service? (3) What satisfactions do these workers seek in their jobs? (4) How, if at all, do they change their viewpoint as the level of unemployment rises and falls? (5) How are employers, employed workers, and unions affected by the changed conditions?

Though the study's results indicated the importance of *chance* in worker mobility and the existence of wide variations in hiring rates within a small geographic area, the authors appeared convinced that the evidence indicated that the labor market concept of wage theory was helpful in explaining events in the community. Myers and Shultz presented their evidence in four points.

[28] Charles A. Myers and George P. Shultz, *The Dynamics of a Labor Market*, Prentice-Hall, New York, 1951, pp. 3–4, 198–204.

I. The vast majority of workers interviewed were not willing to make any immediate change in their place of residence. This was more true of those with dependents than of those without. Also, many workers were willing to take jobs outside the city if these jobs were within commuting distance.

II. Unemployment in the community did have an effect on worker, union, and employer behavior. Displaced workers tended to emphasize employment security and wages as more important job satisfactions. The attitudes of employed workers also changed. With increased unemployment, employers found: (a) Where they could not staff plants adequately before the shutdown, they were able to adopt a selective hiring policy afterwards, (b) Where they were previously lax in discipline, they now replaced unsatisfactory employees with qualified and more conscientious workers, and (c) Where pressure on low hiring rates was pushing the minimum slowly upward, this pressure was relieved. In a few cases, these rates were actually lowered.

Weak unions discovered that hostile employers could undermine their bargaining position by using the pool of unemployed as a way to increase worker dependence on the employer. Even where unions were strong and union-management relationships were friendly, unemployment and short-time work in the particular plant moderated the collective bargaining demands of many unions and resulted in settlements far below those of immediately previous years.

III. The wide range in minimum rates and average rates of pay that evidently existed in the community must be modified by two considerations: (a) Employers generally felt that the available labor supply was heterogeneous; the quality varied widely and relatively high wages, they believed, attracted relatively good employees; and (b) Many employers believed that they hired from a restricted labor market. Machinists and woodworkers, for example, were virtually noncompeting groups, and variations in rates between them could be explained on those grounds.

IV. The displaced workers appeared to have considerably more knowledge about wages and working conditions in various local plants than previous studies of local labor markets had indicated. Only a small percentage knew nothing about jobs they took after the shutdown. *A majority of the workers interviewed, both employed and unemployed, named "good" and "poor" places to work in the community, with "wages" being the most important differentiating factor. While chance and the scarcity of other employment opportunities explained many job choices, workers would move toward the high-wage firms, given that opportunity.*

Another New England City

The crux of this discussion is the relationship between labor mobility and wages. Precisely this question constituted the central purpose of Lloyd G. Reynolds' book *The Structure of Labor Markets.*[39] In that work he did two things: (1) reported the results of a case study of wages and labor mobility

[39] Lloyd G. Reynolds, *The Structure of Labor Markets*, Harper and Bros., New York, 1951.

in a medium-sized New England city; and (2) engaged in an extensive discussion of labor market theory and policy. Our interest centers in the case study.

The city's population was 352,036 in 1947. This size enabled its leaders to meet frequently and be well known to each other, but prevented labor from moving freely throughout the metropolitan area in search of employment.[30] The study was restricted to manual labor, with the basic field work being conducted during the years 1946–48.[31] This was a period of extremely low unemployment both in the city and nationally, although the labor market became less tight by the end of 1948.

The study's data were drawn from three main sources: (1) worker interviews; (2) management interviews; and (3) other sources of statistical and interview information (the manufacturers' division of the Chamber of Commerce, the state headquarters of the National Metal Trades Association, the State Employment Service, the unemployment compensation system, the State Department of Labor, and the local school system).[32]

The worker interviews involved three samples (separate groups of workers). Sample 1 included some 450 workers, constituting a cross-section of the city's manual working population as of October 1945. This group included few war veterans. It was relatively old, skilled, and immobile. Sample 2 included some 350 workers employed in manufacturing industries. This group was relatively young, contained many war veterans, and was more mobile than sample 1. Sample 3 was a small group of 50 unemployed workers. They were questioned intensively on their methods of job hunting and their minimum standards of an acceptable job. These samples are, of course, not so extensive as the first two studies discussed in this section, which covered 1,712 and 2,578 workers respectively.

Reynolds' conclusions relative to mobility were stated briefly under four headings: (I) factors affecting a worker's mobility rate; (II) the relative frequency of different types of movement—industrial, occupational, and geographical; (III) the characteristics of interindustry movement; and (IV) the significant lines of cleavage within the labor market.[33]

I. *Factors Influencing Mobility Rates*

A. Most labor turnover occurs within a small segment of the labor force.

B. Unskilled workers change jobs more frequently than the semiskilled, and these in turn move more frequently than skilled workers.

C. Labor's inclination to change employers decreases with increasing length of service. It appears that the acquisition of seniority is the result of an employee's earlier decision that the particular firm is a good place to work.

D. Older workers are less mobile. Age, of course, is related to length of service. This seems to indicate that labor, after a certain amount of "shopping around"

[30] *Ibid.*, pp. 56.
[31] *Ibid.*, pp. 9, 11.
[32] *Ibid.*, pp. 15, 16.
[33] *Ibid.*, pp. 38–41.

in youth, makes an occupational adjustment and settles down to acquiring seniority, pension rights, and other forms of security.

Skill, length of service, age, and other factors are related to labor's inclination (propensity) to change jobs. The extent of *actual movement* is, however, somewhat different. It may depend equally, or more, on the rate of expansion in the total demand for labor.

II. *Relative Frequency of Various Types of Movement*

Interplant movement is most frequent because (except for intraplant promotions) it is a prerequisite for any other sort of movement. Next most common is interindustry movement.

III. *Characteristics of Interindustry Movement*

The walls around specific industries are like sieves. Not many workers remain in the same industry throughout their working lives. Some workers show an amazing variety of movement. Reynolds found that within a single year about half the workers hired by firms in the city studied came from other types of industry. Although a worker leaving a company is somewhat more likely to go to another company in the same industry, or to certain "neighboring" industries, this tendency is not very strong and appears capable of being overridden by war emergencies or other drastic shifts in the demand for labor.

IV. *Labor Market Lines of Cleavage*

Reynolds draws from his study the impression that the most important boundaries among labor markets run along geographical lines. Thus, a labor market can be identified with a locality small enough so that people can readily travel from homes in any part of the area to jobs in any other part.

Having noted the above characteristics of mobility, Reynolds analyzed the factors influencing workers to take a job.[34]

The relative frequency with which different job elements were mentioned in the answers to various questions is indicated in Table 6. An entry of "1" in a particular column of the table means that that job element was mentioned more frequently than any other in response to a particular question. An entry of "2" indicates that that element was mentioned next most frequently. Similarly with entries of "3", "4", or more. The rank order shown in the table is a rough measure of relative significance.

Some of the terms used in Table 6 require explanation. *Wages* includes two elements: (1) living costs; and (2) wage comparisons. The cost-of-living element was mentioned about twice as frequently as the comparative wage element. This may be due to the fact that the study was made during a period of rapidly increasing living costs. *Physical Characteristics of the job* includes: (1) the nature of the job itself (degree of cleanliness, arduousness, and hazard); (2) physical plant conditions (cleanliness, ventilation, etc.); and (3) the type of machinery (modern or obsolete, and in good or bad condition). The first (nature of the

[34] *Ibid.*, pp. 91–181.

TABLE 6[31]

Factors in Job Satisfaction

FACTOR	AVERAGE RANK	LEFT LAST JOB BECAUSE		DISSATISFIED WITH PRESENT JOB BECAUSE		SATISFIED WITH PRESENT JOB BECAUSE		LAST 3 JOBS RATED "GOOD" OR "BAD" BECAUSE (S2)		INT. IN TRANSFER TO OTHER JOB IN PLANT BECAUSE (S2)		WOULD OR WOULD NOT WORK IN OTHER SPECIFIED PLANTS BECAUSE (S1)		WHAT MAKES A JOB A "GOOD" JOB (S2)
		S1	S2	S1	S2	S1	S2	Good	Bad	Int.[a]	Not Int.[b]	Would work	Would not work	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Wages	1	1	1	2	2	2	1	1	2	1	2	2	1	1
Physical characteristics of the Job	2	2	2	3	3	4	3	2	1	3	3	3	2	2
Independence and control	3	3	3	1	1	1	2	4	3	6	4	5	4	3
Job interest	4	4	4	5	5	7	4	3	5	2	1	1	6	4
Fairness of treatment	5	5	5	4	4	6	5	6	4	5	5	6	3	5
Relations with fellow workers	6	6	6	6	6	3	7	5	7	4	6	4	5	6
Steadiness of work	7	7	7	7	7	5	6	7	6	7	7	7	7	7

[a] Interested.

[b] Not interested.

The symbols S1 and S2 refer to Samples 1 and 2 respectively.

The overall ranking of a factor (column 1) was obtained by taking an arithmetic mean of its rank in the other 13 columns of the table.

job itself) was mentioned most frequently. *Independence and control* means: (1) freedom from too close supervision; and (2) a chance to voice one's opinion on how the job should be done. Generally, this factor involves the worker's relation with his supervisor. *Relations with fellow workers* refers to: (1) the type of person with whom the worker is associated on the job; (2) the degree of cooperative spirit in the group; and (3) the degree to which others in the group look to the worker for leadership. The other terms used in the table seem self-explanatory.

The ranking of the various job factors by the workers covered by samples 1 and 2 is markedly consistent. *Wages* appears in first or second place in each instance. *Physical characteristics of the job* stands almost invariably in second or third place. On the other side, *steadiness of work* stands at the bottom in ten of the 13 columns. This seems to indicate *consistency* in the worker's responses to different questions. It *may* also indicate a basic *reliability* in the responses, i.e., a correspondence between the worker's statements to the interviewer and his actual feelings and behavior.

Some interesting variations appear, however, in connection with the other

[31] *Ibid.*, p. 93.

job factors. *Independence and control* ranks third in overall standing, but it rises to first place when the worker is appraising his present job (columns 4–7). This may indicate that workers forget how good or bad their supervisors were on previous jobs, and have no way of judging how good they will be on prospective jobs. *Job interest* stands fourth on average, but it rises to the top when the worker is considering a transfer to another job (columns 10 and 12). Workers who said they would not leave their present jobs most commonly cited the interesting *nature of their present work* (column 11). Workers who wanted to leave their present jobs most commonly cited *wages* as the reason, with *job interest* ranking second (column 10). Workers expressing a preference for work in some other plant also gave the *interesting nature of the work* as their most common reason (column 12).[36]

Recognizing limitations in coverage and technique, Reynolds nevertheless concluded that the main criteria in worker job evaluation are: (1) money income; (2) the physical nature of the work; (3) the degree of independence on the job and the agreeableness of supervision, (4) the degree of interest in the work; and (5) the fairness with which the worker feels he has been treated by management. Reynolds suggests also that a relation of substitution between money income and other job elements may be reasonably assumed. Thus, higher wage rates can serve as an offset to poor working conditions, irregular employment, disagreeable supervision, and so on. The relationship, however, does not seem to be a continuous one, for workers did not seem very sensitive to small variations in income. Thus, it would have required sizeable increases in wage rates to compensate for a worsening of jobs in other respects.

Reynolds made a special effort to determine how workers decide whether a particular wage rate is good enough to warrant taking (or staying on) the job. The reasons which workers gave for regarding their wage as fair or unfair are shown in Table 7.

Cost-of-living stands out prominently. This may be due to the fact that all the interviewing was done during 1947, a period of rapidly rising prices. Simultaneously, peak wartime earnings had diminished somewhat due to reductions in weekly hours of work. A study made during a period of falling prices and rising real incomes might have revealed less concern with the cost-of-living factor.

Comparisons were important. Three major factors in Table 7 involved comparisons: (1) rates for similar work in other plants; (2) nature of the work; and (3) rates for other jobs in the same plant. In connection with *nature of the work*, workers seemed to express an absolute judgment that a certain kind of work is worth just about so much. Actually, these judgments rested on an implicit

[36] The sampling technique used involved two limitations, in particular: (1) there was no careful attempt to measure the *intensity* of the worker's feelings about each of the job characteristics he mentioned; and (2) there was no systematic exploration of how far the worker's job attitudes were conditioned, not by job characteristics, but by the worker's own personality, intelligence level, family life, and other non-job factors. *Ibid.*, p. 96.

TABLE 7[37]

Workers' Standards of Fair Wages

FACTOR	REASONS FOR REGARDING WAGE AS UNFAIR (%)		REASONS FOR REGARDING WAGE AS FAIR (%)	
	Sample 1	Sample 2	Sample 1	Sample 2
Cost of Maintaining an adequate living standard	35	30	15	30
Rates for Similar Work in Other Plants	10	27	27	27
Nature of the Work	35	21	23	21
Rates for Other Jobs in the same plant	6	6	8	6
Union scale	2	2	5	2
Length of service	1	2	4	2
Company's ability to Pay	6	1	2	0
Others, and no reason given	5	11	16	12
Total	100	100	100	100

comparison with previous jobs held by the worker or with other jobs which he saw around him in the plant. The basis of these comparisons, however, were not made explicit. Workers stressed these job elements most heavily in explaining why a certain kind of work deserves a certain rate of pay: (1) the degree of physical effort required, tempo of work, or quantity of work accomplished during the day; (2) safety hazards and other working conditions; and (3) degree of responsibility. On the other hand, management, in setting relative wage rates, usually emphasizes skill, education, experience, and training requirements. Although Reynolds believes the importance of comparisons to be overstated, with workers often using them as a peg on which to hang discontent originating in some other factor, the factor still seems important.

On the basis of the above evidence, Reynolds' study appears to indicate a significant degree of rationality in worker behavior with regard to the relationship between wages and job choice. Reynolds, however, expresses profound doubt as to this relationship. He notes: (1) that workers' comparisons were imprecise or inaccurate;[38] and (2) that wage differentials do not, in important degree, redistribute labor among firms and occupations.[39]

In this connection, we must recall our previously reported and somewhat more extensive studies. Myers and Schultz noted that workers appeared to have more knowledge about wages and working conditions in various local plants than indicated in other studies. The six city survey of occupational mobility indicated that workers making voluntary job shifts generally increased their wages as against the group making involuntary job changes. The Bureau of Labor Statistics' study of tool and die makers, as well as the others reported, indicated that workers, particularly skilled ones, are relatively purposeful and rational in their labor market behavior.

[37] *Ibid.*, p. 99.
[38] *Ibid.*, p. 100.
[39] *Ibid.*, p. 224.

SUMMARY

The labor market is not perfectly competitive. In terms of "workable" though "imperfect" competition, however, we may say the following about wage determination and its relation to labor mobility.[40]

I. Workers have some knowledge of jobs other than those on which they are currently employed, have some freedom of choice among employers, and make some calculation of the relative attractiveness of alternative jobs. This calculation is not based *solely* on wage considerations. Labor takes into consideration any aspect of a job which it considers relevant. It is not necessary that workers have full knowledge of job opportunities or that all workers have full knowledge of job opportunities or that all workers make careful comparisons. Competition may be effective despite the ignorance or inertia of the majority.

Within the limits set by knowledge and market structure, workers will choose better jobs in preference to poorer ones. Voluntary movement of labor will show a drift toward more desirable jobs. Employers offering especially desirable jobs will have a surplus of applicants for work. Employers offering less desirable jobs will experience labor shortages.

II. An employer who wishes to keep a constant share of the area labor force must keep the over-all attractiveness of his jobs in line with the attractiveness of jobs offered by other employers. The employer may have some latitude in selecting ingredients for the "package" of employment conditions which he offers. He is bound, however, by the requirement that the "package" as a whole must be as attractive as that offered by other employers.

III. In consequence of this behavior of workers and employers, there may be a tendency toward equalization of the net attractiveness of all jobs in the area. The tendency toward equalization of job attractiveness requires time. Actually, it could be effective only if each employer in an area desired to retain the same proportion of the area's labor force forever. But the demand for labor is dynamic. An expanding firm may need to offer more attractive terms than others. A declining firm may offer poorer terms, and lose labor. The quality of labor is also a factor. Employers willing to hire low-quality labor may be able to offer relatively poor employment terms.

IV. Movement arises also from changes in the availability of jobs in particular firms, trades, and areas. People move away from situations where jobs have been destroyed. They move to places where new jobs are opening up and rivalry for these jobs is not so severe.

The view that workers can be redistributed *only* by changes in wage differentials is incomplete. They are reallocated also by differentials in the availibity of jobs. When workers are no longer needed, they are discharged. To get them where they are needed, in such instances, it is necessary only to indicate job availability. In sum, the allocation of labor seems to be a function of *job attractiveness* (with wages of special importance) and *job availability*.

[40] *Ibid.*, pp. 208–210, 244.

COMMUNICATIONS

AN EMPIRICAL TEST OF THE INCOME VELOCITY OF MONEY AND INTEREST RATES

In this paper we use data on money supply, national income and interest rates for a group of countries for different years to test the hypothesis that there is a significant relation between the income velocity of money and long-term interest rates. In Table 1 we give the underlying data on money supply, national income, income velocity, and long-term interest rates in relatives, based on the mean of 1938, 1948 and 1951 as 100, for all of the fourteen countries for which all such information is included in the 1952 *United Nations Statistical Yearbook*.[1] Both money supply and national income are expressed in current money not deflated to real terms. The figures in each case are taken as given and qualifying and descriptive footnotes are omitted. We have made no attempt at a close study of the economy of the countries involved or of the reliability of the individual figures.

Comparison of figures for 1938 and 1951 in Table 1 shows clearly the general inflationary character of the period as a whole. There is no indication as to the changes which may have taken place in real income but certainly it did not increase to the extent that money income went up. There was an increase in money income in each period in each of the f ırteen countries. Money supply increased in each period in all except three of the countries.

Median changes in income velocity were not as great as changes in income or in money supply but were far from negligible. The pattern in changes in median velocity, showing a decline from 1938 to 1948 and an advance from 1948 to 1951, does not seem to fit any business cycle pattern, if indeed cyclic influences can be identified clearly in the post-war period. Changes in the income velocity of money were of major significance for individual countries. In 1951, for example, velocity for individual countries varied from 40% over the 1948 level to 16% under. The comparison between changes in money and income and between velocity and interest rate is clear in the median figures for the fourteen countries. Both the money supply and the national income increased very substantially in the thirteen years. From 1938 to 1948 both velocity and interest rate declined; from 1948 to 1951 both advanced.

The scatter of the data for the individual countries about the median indices also may be noted. The interquartile ranges of the various series, shown in Table 1, give some indication of the variability of the data.

These interquartile ranges indicate that income for the individual countries tended to fluctuate less widely about the group average than did money. Possibly there was some tendency for prices and, so, money income of the individual

[1] Published by the Statistical Office of the United Nations Department of Economic Affairs. Data for the United States are not included because there is no interest rate series for the United States in the UN handbook. Presumably this omission is caused by the lack of a good series on long-term fully taxable government bond yields.

TABLE 1

Data on Money Supply, National Income, Income Velocity and Long-term Interest Rates
(In Relatives Based on the Mean of 1938, 1948 and 1951 as 100)

	M			Y		
	1938	1948	1951	1938	1948	1951
Argentina	17.7	93	189	22.2	95	183
Australia	22.3	103	175	39.0*	98*	163*
Belgium	38.7	126	135	32.0	121	147
Canada	31.8	123	145	36.0	112	153
Denmark	47.0	131	122	44.5	111	145
France	9.6	105	185	7.3§	109	183
Italy	2.6	116	181	2.8	129	168
Netherlands	44.3	128	128	42.4	111	146
New Zealand	29.3	116	155	47.4†	102†	150†
Norway	27.7	130	142	44.0	108	148
Sweden	43.0	115	142	48.0	105	147
Switzerland	61.2	110	128	57.0	115	128
Union of So. Africa	31.8	134	134	47.0*	108*	145‡
United Kingdom	41.3	126	132	55.4	113	132
Median	31.8	119	142	43.2	110	147
Interquartile range	20.7	18	43	15.4	8	18
	V			r		
Argentina	116	94	90	130	85	85
Australia	145	78	77	108	90	101
Belgium	87	99	113	96	103	101
Canada	109	88	103	100	95	105
Denmark	96	85	119	95	91	114
France	82	112	106	86	98	117
Italy	105	106	89	101	93	107
Netherlands	97	88	115	92	99	110
New Zealand	140	77	84	115	92	93
Norway	138	72	90	136	78	86
Sweden	110	90	100	94	101	106
Switzerland	94	105	100	102	107	92
Union of So. Africa	133	72	96	104	87	109
United Kingdom	125	83	92	98	93	109
Median	109	88	98	100	93	105
Interquartile range	36	21	16	13	9	16

Sources: Y—UN 1952 *Statistical Yearbook*, Table 155, page 406, "Estimates of National Income," converted to relatives with average of 1938, 1948 and 1951 equal to 100. M—UN 1952 *Statistical Yearbook*, Table 159, page 419, "Money Supply." Average of sum of "currency" and "deposit money" at beginning and end of each year under consideration, converted to relatives with average of 1938, 1948 and 1951 equal to 100. V—Y/M. r—UN 1952 *Statistical Yearbook*, Table 163, page 435, "Government Bonds: Yields of Long-Term Bonds," converted to relatives with average of 1938, 1948 and 1951 equal to 100.

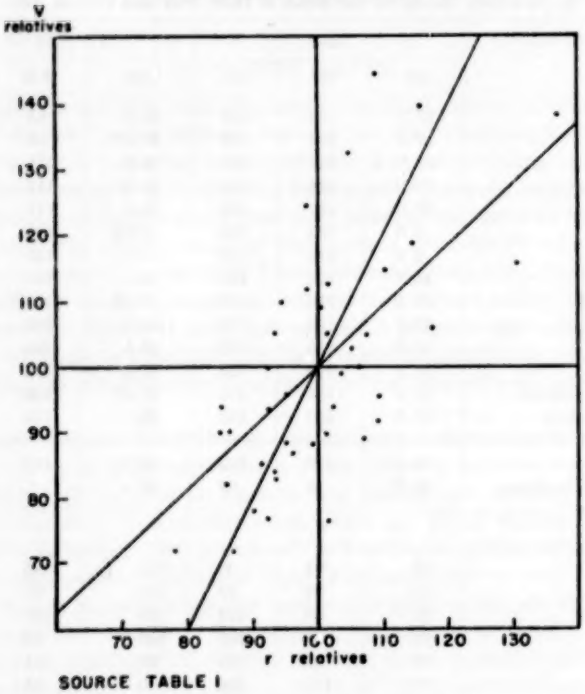
* Year beginning July 1.

† Year beginning April 1.

‡ Year beginning July 1, 1950.

§ Partly estimated.

CHART I
INCOME VELOCITY AND INTEREST RATES
Fourteen Countries 1938, 1948, 1951



SOURCE TABLE I

countries to move in line with prices on the world markets in spite of variations in money supply. The second point to be noted from the ranges is the fact that income velocity showed about as wide a spread about the central values as did money supply. This emphasizes the importance of fluctuations in velocity. Finally, the table indicates that interest rates showed about the same variability about their central points as did income.

The relationship between measures of income velocity and interest in our sample can be shown by a direct comparison of the index numbers measuring income velocity and long-term interest rates. This is done in Chart 1 which shows a scatter diagram of data in Table 1. Lines showing the least squares regression of interest on velocity and velocity on interest have been placed on this chart. In view of the rough nature of the data, the quantitative significance of the slopes of these lines is doubtful. The data are in such form that they can be used to test whether or not there is a significant relationship between income velocity and interest rates but cannot be of much value in quantifying the relationship. There is positive correlation between measures of velocity and interest rates with a correlation coefficient of .69.

As is indicated in the chart, there are 28 observations where r and V are both

above 100 or both below 100 and only eleven instances where one is below and the other is above 100. The relationship between the level of V and the level of r also holds for the individual years. In 1938 in ten instances V and r were both above or both below the median for the group of fourteen countries and in only four instances were one variable above and the other variable below its median. Corresponding figures were 9 and 1 in 1948 (with the other four items being at their medians) and 9 and 5 in 1951. The combined results show that V and r were on the same side of their medians in twenty-eight cases and on different sides in ten cases. The chi square for this distribution is 8.5. Such a distribution would occur by chance alone less than one time in 200 if the two series were in fact unrelated.

The probabilities strongly favor a direct relationship between velocity and interest rates. This conclusion is supported by data for the United States covering a long period of years developed in another article[2] by the writer of the present study. These data indicate clearly that cash balances have tended to be small in relation to income in the United States when interest rates have been high and have tended to be large when rates were low. In other words, the income velocity of money tended to vary directly with the interest rate.

Whether or not the interest rate affects the money supply, it is clear that it affects or is affected by the actions of cash holders and consequently the income velocity of money. A drop in interest rates lowers the opportunity cost of maintaining cash balances; consequently more holders at each income level tend to use the convenience and security of large bank balances or cash in hand. A rise in interest rates increases the cost of holding balances so people and firms economize on them. Consequently, the income velocity of money increases. This effect may or may not be reinforced by cash holding for speculative and protective purposes. Most of these latter demands for liquidity can be satisfied by assets such as savings deposits and government bonds which we do not class as money. If the interest rate advances, the holder of cash balances takes the trouble to shift this marginal deposits into interest-bearing obligations; if otherwise, he leaves the money in his checking account. Conversely, if the money supply is large relative to money income at the going rate of interest, cash holders tend to increase their demand for interest bearing obligations and thus to lower the interest rate.

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[2] "Cash Balances and the Interest Rate—A Pragmatic Approach," accepted for publication in the *Review of Economics and Statistics*.

MR. SCOVILLE ON COLONIAL LAND WASTAGE

Mr. Scoville's recent communication on the wastage of farm land in colonial America[1] justly brings attention to very poor treatment of economics in the hands of the historians. But though he may be correct in asking us to revise our thinking about colonial farming, his analysis contains several faults to whose correction this note is directed.

First of all, there is ambiguity in the concept of wastage. What was wasteful

[1] Warren C. Scoville, "Did Colonial Farmers 'Waste' Our Land?," *Southern Economic Journal*, October 1953.

in Europe would not have been wasteful in America at that time owing to the different scarcities of factors, labor and capital being scarce in colonial America relative to land. Mr. Scoville is correct in stating that under these circumstances, "Had they adopted the farming practices of their contemporaries in Europe, they then would have been guilty of the economic crime frequently charged against them" (p. 179).

But when he proceeds to consider wastage in its second and more relevant sense, i.e., nonmaintenance of the fertility (productivity) of the soil with constant applications of the other factors, Mr. Scoville still applies the earlier criterion: "One result of their using a little capital and labor in farming a large amount of land, however, was the depletion of the soil." The less intense application of labor and capital to land should if anything have led to a smaller drain on the fertility of the soil than the European factor proportions. While it is true that high interest rates (a result of limited supplies of capital) might induce maintenance of soil fertility at lower levels than lower interest rates (plentiful capital), the mere proportions of factor inputs do not directly "cause" a drain on soil fertility.

Four plans of land management can be set out in considering depletion:

A. To maintain the initial fertility of the land by "plowing back" a portion of the gross yield in some form (rotation, commercial fertilizers, cover crops).

B. To increase the productivity of land in each period by plowing back *all* of the gross yield.

C. To "mine" the land for a period, but then maintain its (lower) net yield afterward.

D. To mine the land continuously (plow back less than enough to stabilize net yield; at the limit to draw out the largest gross yield in each period), and ultimately abandon it.

Mr. Scoville tells us that colonial farmers probably should have chosen *C* or *D* and he uses an arithmetical illustration to make his conclusion apparent.

> . . . Suppose (a farmer . . . in 1790) knew from the experience of his neighbors that, if he adopted [(exploitative cultivation), C or D] . . . he could increase his revenue for that year by $1,000 over and above what he could realize from farming it in such a way as to conserve its original fertility. If the discount rate in 1790 were 5 per cent, and if he knew that the land in 1950 . . . would be worth approximately $2,456,000 he would be on the margin of indifference whether to conserve it or use it up . . . An ordinary section of fertile land in North Carolina today is worth a lot less than this; . . . Hence it probably was to the individual's advantage in 1790 and to the advantage of those Americans living in 1950 that most farmers in the eighteenth century disinvested the "capital" latent in their land and invested it in other assets which had greater value and yielded far greater returns over the years.

The total error of this argument is the assumption (implicit) of plan B in describing how farmers *would have behaved* if they maintained the land rather than used plan A.

Plan B implies a rate of saving out of land income of one, which saving is reinvested in the land to accumulate at compound interest. If farmers consumed the bulk of their (net) land income, there could not have been the steady growth

in land value which compound interest implies. That land did not grow in value, therefore, far from telling about depletion and its profitability, could (and would) have merely resulted from farmers consuming their incomes. On the other hand, only hypothetically could $1,000 invested in industry have grown at compound interest. Here too it would depend on the consumption decisions of investors. No wonder that the hypothetical sum has the larger growth.[2]

But even if farmers had behaved "hypothetically" (i.e., reinvested all of their rent income) would they have been wise to put it back into the land? With diminishing returns from successive additions of capital to a fixed amount of land, how could we even consider a case where all income is plowed back? Yet not reinvesting it in land does not prove the smaller productivity of land.

The rationality of land maintenance requires study of the several factors illustrated by the following schedule. Only A and the extreme of D of the four types of "production plans" are considered:

YEAR		I	II	III	IV	V	VI
Plan A:	Gross yield if maintained	12	12	12	12	12	12
	Maintenance	2	2	2	2	2	2
	Net Yield (a)	10	10	10	10	10	10
Plan D:	Gross yield if *not* maintained (d)	12	11	10	9	9	8
	Maintenance	0	0	0	0	0	0
	Net surplus from mining the land (s)	2	1	0	−1	−1	−2

When, now, will it pay to choose production plan D rather than A? When the present value of the net a stream minus the present value of the net d stream is less than the present value of the s stream. The likelihood of $PV_a - PV_d < PV_s$ will be influenced by

1. the rate of discount (the higher it is the heavier will be weighted the early numbers, i.e., the more important become the early values of s when early values of a and d are not too unequal).
2. the rate at which d falls off.

Only a study of the whole range of production functions (A, B, and all forms of C and D) can determine which policy would have been wise. Mr. Scoville considers only "depletion" as an alternative to maintenance (which, as was shown, he confused with plan B, "improvement"); the above illustration should make clear the continuous range of choice from complete "improvement" to steady maintenance to "absolute" depletion. These choices are relevant not only for the colonial farmer, but for any farmer of the present day.

In some degree almost all virgin land is mined; it is widely known that on first being plowed up, land yields considerably more than would be practical to maintain through commercial fertilizing. Is it mining this land to carry on cultivation at lower levels of yield (plan C)? Clearly the application of fertilizers sufficient

[2] There is a still prior objection to Mr. Scoville's method in observing the value of current land. If it would have paid colonial farmers to mine the land, they probably did so; therefore, any land we observe today has been depleted, whose current value, certainly, is not a good indicator of the current value of land which would have been maintained. Mr. Scoville's justification for using depleted land values for comparison is not adequate.

to maintain this level of fertility would not only have been impractical in colonial America but could be so *even today*.

Thus the typical production function might appear quite different than the one used here as illustration (A), with very high initial yields, dropping off, but stabilized later through maintenance, (plan C). If land were free and the costs of moving and clearing negligible, the most profitable plan would certainly be to plow it up, harvest several crops without maintaining it, and then abandon it (plan D). But few areas of the country could have been settled in this way; the costs of transport and clearing were very high. Not even the plains states could have been "perfectly" exploited, where a lighted match could clear acres of land, since the cost of breaking up the soil itself was very high and required heavy equipment.[3]

The possibility of mining the land of its virgin fertility makes conceivable also the possibility of moving on from cleared to uncleared land. If farmers actually behaved in this way, mining would not (as Mr. Scoville suggests) have been carried out because of the high yield of industrial investment. A high yield in industry might explain mining land already settled, but hardly explains the successive mining of new lands in which new investment must be made, (in other words, I (investment) $< PV_a < PV_r$ when PV_d becomes zero). Exploiting these yields is not inconsistent with later maintaining the land at some lower productivity. But only a study of production functions and costs of clearing land and moving would be adequate to explain the profits in (various degrees of) mining the land and deserting it for new lands. Both the economist and the historian must here defer to the agronomist and statistician. This note is intended only to point out the error of Mr. Scoville's approach and to outline a framework in which land maintenance should be considered.[4]

Vanderbilt University ROGER W. WEISS

[3] The remarks of Tocqueville, though hardly definitive, are suggestive: ". . . Fifty years have scarcely elapsed since (the state) . . . of Ohio was founded; the greater part of its inhabitants were not born within its confines; its capital has only been built thirty years, and its territory is still covered by an immense extent of uncultivated fields; nevertheless, the population of Ohio is already proceeding westward, and most of the settlers who descend to the fertile savannas of Illinois are citizens of Ohio. These men left their first country to improve their condition; they quit their resting-place to ameliorate it still more. . . .
. . . It is not uncommon in crossing the new States of the West to meet with deserted dwellings in the midst of the wilds; the traveller frequently discovers the vestiges of a log-house in the most solitary retreats. . . . In these abandoned fields, and over these ruins of a day, the primeval forest soon scatters a fresh vegetation."

A. de Tocqueville, *Democracy in America*, The World's Classics, Oxford, p. 223.

[4] Of course the great uncertainty with which the pioneer chose sites would have led to a high rate of error; perhaps a large part of later desertion of farm land was composed of those who had made mistaken choices. Lack of knowledge might account for the more spectacular cases of depletion; farmers experienced in the climate, soil composition, and drainage of one region might well apply inappropriate techniques to lands whose resemblance to the former region would be only superficial. Thus, perhaps, the experience in overgrazing the western plains and plowing up what became the "dust bowl." Fortunately, the central states, Illinois, Indiana, Tennessee, and Kentucky were not generally subject to this sort of accidental depletion.

REJOINDER

If I understand Mr. Weiss correctly, we are both trying to talk the same language, that is, we are not immediately concerned with some of the thorny problems of social welfare economics and of inter-personal (or inter-community-generation) utility comparisons, but we are interested in what would be the basis for rationally choosing between a number of alternative possibilities involving the allocation and "conservation" of a natural resource in terms of market-price data. He and I basically are in agreement, or so it seems to me, on the major point, and whatever disagreement exists appears to result from a misunderstanding of my exposition or from unwarranted inferences he has drawn from my statements.

I. The American farmer in 1790, as in 1950, faced a large number of alternatives in the employment of his land. Rational economic behavior required that he follow the well-recognized principle of opportunity costs and decide to augment, maintain, or disinvest all or part of the "capital" latent in the land, depending upon which of the many possible income streams from the land had the greatest *present* value. The gross income from land is usually defined as that part of the total farm income left after the farmer has subtracted all explicit and *implicit* costs of the other factors, which, of course, include the capital necessary to bring the land under cultivation. Part of the gross income is net rent, and part is disinvested capital or any income resulting from "using up" part of the natural fertility of the soil. For present purposes, the relevant portion is this disinvested capital. If the farmer believes that ploughing this amount of capital back into the land would yield a larger present value of future income than he could obtain by investing it in alternative ways, then he would be acting rationally if he decided to maintain his land's productive capacity. If the farmer believes the contrary to be true, he would be rational only if he invested all or part of the "liquidated" capital in other things, for example, in houses, barns, or fences on the land; in clearing new land; or in industry and trade. In my earlier communication I accepted as a "fact" the usual contention that land and timber resources were "used up" in colonial America to some extent (but rarely entirely). I then suggested that such action did not necessarily reduce the productive capacity of modern America, and that, *a priori*, in view of the relative abundance of natural resources in 1790 as compared with other factors, increasing the supplies of the scarcer factors at the expense of natural resources probably enlarged the present national wealth and productive capacity over what they otherwise would have been. The burden of proof, therefore, would appear to lie with those who have claimed that colonial farmers "wasted" our natural resources by exploitative agriculture and thereby penalized present generations.

II. Mr. Weiss obviously has misunderstood that statement of mine which he quotes at length. If an owner is debating whether to conserve a given capital asset for some future date because he believes that the asset will have a higher value in the future than at the present (regardless of the cause for the increase in its constant-dollar value), he will be acting rationally only if he compares the present value of the asset with its *discounted* expected future value and then chooses that alternative with the higher present value. Or, he could base his

choice on comparing the future value of an amount of present capital funds with the expected future value of a particular capital asset. The only way he could arrive at such comparable figures would be by "hypothetically" compounding the present capital at the existing interest rate over the time period involved or by correspondingly discounting the future value to the present. Whether $1,000 of capital in 1790 would ever *in fact* have built up into more than $4,000,000,000 by 1950 is completely beside the point. The 1950 value of $1,000 of 1790 capital would still be over $4,000,000,000 if compounded at 10 per cent. Whether one discounts the 1950 value to a 1790 present value or compounds the 1790 present value to a 1950 future value, one would find that a liquidatable asset worth $1,000 in 1790 would have to have a value of some $4,000,000,000 in 1950 (at 10 per cent) or some $2,400,000 (at 5 per cent) to warrant conserving it for 1950. That a piece of land which had a market value of $1,000 in 1790 (which presumably represented the capitalized value of its expected net income stream) would have had a market value of some $4,000,000,000 in 1950 (which would have been equal to its capitalized expected net income) must have seemed very remote to colonial farmers. Gifted with hindsight, it even appears fantastic to us today.

In so far, therefore, as colonial farmers withdrew capital from their land by mining the soil and invested it in other things where the capital yielded a higher net return, i.e., in so far as they invested (allocated) rationally, they were benefiting both themselves and those who are living now. For the sake of our generation, colonial farmers should have chosen 1790 assets so as to maximize 1950 values; for their own sake, they should have chosen assets with highest anticipated 1950 values in order to maximize their 1790 value. The consequence would not have been "wastage" in any sense.

III. I would like to comment briefly on a few particular points made by Mr. Weiss.

A. In the schedule he has prepared, it is not at all obvious just what is the significance of "*s*" or the "net surplus from mining the land." Using his symbols, PV*a* minus PV*d* is *identical* with PV*s* (i.e., the difference between the present value of "*a*" and the present value of "*d*" is the present value of their differences). All one needs to know, therefore, is whether PV*a* is greater or less than PV*d*. If the former, one should conserve or maintain land until PV*a* equals PV*d*; if the latter, one should disinvest until PV*a* equals PV*d*.

B. I deny there is ambiguity in the concept of "wastage" as I and most other economists use the term; also I deny that I used it in "two" senses. Waste means simply the failure to maximize economic value from a given amount of resources. What Mr. Weiss probably intended to say is that I speak of two aspects of the allocation problem: (1) producing a given output with the least-cost combination of available resources and (2) choosing between different lines of activity or different products. These are two aspects of essentially the same problem of allocating resources in order to maximize economic value.

C. Neither farming extensively nor farming intensively leads *per se* to mining the soil, maintaining it, or increasing its productivity. What does determine the

outcome will be the kind of labor and capital employed and *how* they are employed on the land. All I intended to state in my original note was that the colonials farmed extensively and also mined the soil. These two statements (whether they are actually true is beside the point in this discussion) are certainly not inherently incompatible (see, above, p. 88).

D. I fail to see why a high interest rate, if it helps to account for the mining of soil already under cultivation, also would not help to explain why farmers undertook the cost of moving and of bringing new land under cultivation only to mine it subsequently.

E. I, for one, would be most loath to defer to the judgment of agronomists and statisticians as to whether our natural resources (or any capital good, for that matter) should be conserved or in some degree used up. If they can supply economists with the essential data on all possible production and cost functions, this would be highly desirable. But let us hope that our most competent economists will then be charged with the responsibility of interpreting the data and of recommending desirable public policy regarding conservation.

University of California, Los Angeles WARREN C. SCOVILLE

BOOK REVIEWS

The Logic of British and American Industry: A Realistic Analysis of Economic Structure and Government. By P. Sargant Florence. Chapel Hill, N. C.: University of North Carolina Press, 1953. Pp. xiv, 368, $5.00.

In an age which is predominately characterized and determined in its economic and societal aspects by its mode of production, namely, mechanical mass production in factories, comprehensive treatises on industry remain strangely scarce. Often they are largely confined to mere description or to a somewhat repetitive treatment of the problem of industrial monopolies which lends itself most readily to be fitted into the framework of the general theory of the market, of the business cycle, and of the political theory of a free society.

To go beyond that offers indeed considerable methodological, theoretical and statistical difficulties, particularly so if we comprise under the latter term the whole factual observation of a vast and complex field, not only the establishment of numerical statistics and of the structural pattern, trends and functional relations which can be ascertained through these.

The question, "What is industrial economics?," finds no ready and generally accepted answer. Labor problems, problems of business finance, and marketing are all rather inseparably intertwined with problems of industrial production and social-economic problems pertaining to industry. The demarcation between business economics in the field of industry and social economics in that field is difficult to draw. A true-to-life social-economic discussion of industrial developments requires a good deal of description and analysis of facts and motivations which are also the object of business economics.

Modern business units are often so large that they represent segments of a social-economic structure and process rather than atoms of which the body economic is built. Especially the dynamics of enterprise and plant becomes largely the dynamics of the modern social-economic process. The so-called "workable" imperfect competition of modern theorists is, in the first place, industrial competition. The large organizations involved show not only a constitutional pattern in many ways similar to that of political bodies; imperfect competition as a process is also largely a power struggle and, hence, political. Its adequate realistic treatment is perforce driven across the iron curtain which the conventions of the social scientists, in some respects all too tightly and impenetrably, have drawn between economics and political science.

Professor Florence's present work, which in part is based on older treatises of his, in this writer's opinion represents a major contribution to the field of industrial economics, and handles many of the difficulties which were above alluded to with great skill, good judgment, realistic sense, and originality in method and way of presentation. The author uses the comparative method, comparing two countries for which, in part through his own merit, considerable and suitable statistical data were available, namely, Great Britain and the United States. He is mainly interested in the structural pattern, in command hierarchy and internal operation of firm and plant in industry.

Inevitably some of the statistical data used, and of the conclusions drawn therefrom, may be questioned in detail and, on the other hand, here and there rather obvious points seem to be excessively and somewhat tediously elaborated. Yet the general result seems well established. Concerning this, it is particularly interesting that England in recent decades, following the logic of mass production in her industries, has developed the same traits of incorporation, combinations, vertical and horizontal integration (well defined as the opposite of specialization), as did the United States, a pattern which is strikingly similar for identical industries in both countries concerning the size and organization of firms and plants and the location pattern.

The discussion of the principles of the rational set-up of mass production in mechanized plants, of the limitations of its realization which are due to human frailties and to the vagaries of managers, staffs and operatives, and to the controlling influences of an often diversified, irregular, and, in a sense, irrational consumers demand, are well set forth on essentially familiar lines, though sometimes in somewhat unusual terms.

The problem of industrial monopolies is dealt with judicially, though not very penetratingly, in the European vein, which is less dogmatically opposed to monopoly than is the typical American view.

Very rightly, the author stresses similarities between the command organization of big business and political governments, and discusses arrangements of industrial management in terms of their relative efficiency as governments.

Cooperative organization and nationalization of industries are considered as alternatives to capitalistic organization, which gives occasion for a very interesting brief description of the British "mixed" industrial economy with some very well balanced statements on the pros and cons of nationalization.

What the author has to say about the distribution of power among the various elements of industrial government and about the education of business leaders, especially in England, corroborates the observations of other researchers; for instance, of the Liberal Report on "The Future of British Industries," namely, that the selection of business leaders in that country not infrequently is too much determined by considerations of nepotism and social prestige than purely by considerations of efficiency and capability.

Aided by a vast research experience in this field, the author has given us, in his penetrating and thorough description and analysis, clearer and deeper insights in the pattern of modern industrial organization and operation, without succumbing to the temptation to use his mastery of theoretical and statistical tools merely for the sake of virtuosity.

An exhaustive treatment of the rather ill defined and vast field of industrial economics in all its aspects can hardly be expected from one work of limited size. The essentially structural, static and "indicative" approach of the author, giving a still picture of the two industrial systems rather than "movies," showing them and appraising them as evolving processes, cannot and does not try to do full justice to the dynamic-economic and political aspects of modern industrialism.

As to details, it seems to us that the statistical material presented does not

quite support the claim that industrial plants in England are rather bigger than in America. The definition of *firm* and *plant* does not seem very fortunate to this writer. Possibly, in order to adapt a definition to the usage of official statistics, the author distinguishes merely firms and plants; whereas, from a logical point of view, it seems better to distinguish between firm as the legal unit, enterprise as the economic unit, established by common management and financial interest (which one can consist of several firms), and the plant as the technical unit of production. It is true, however, that a definition which is logically satisfactory and at the same time suitable for practical identification of industrial units is by no means easy to find.

On the whole, we must be very grateful to Professor Florence for a contribution to the understanding of modern industry which in many ways is of great use to the theorists as well as the practitioner.

Duke University HERBERT VON BECKERATH

Capitalism and the Historians. Edited by F. A. Hayek. Chicago: University of Chicago Press, 1954. Pp. vii, 188. $3.00.

This little book is dynamite with a dead cap. Its contributors, already well known for their social viewpoints, are members of the Mont Pélèrin Society, an "international group of economists, historians, and social philosophers" who meet regularly "to discuss the problems of the preservation of a free society." The main theme, imperfectly indicated by the title, is that the "industrial revolution" (or rise of the factory system) was wrongly interpreted by the earliest historians who dealt with it; and that now, although "competent" economic historians are in agreement as to its beneficial effects, a conspiracy of silence on the part of the general body of historians has kept this information from the public mind.

The central portion of the book consists of essays by T. S. Ashton, Louis Hacker, and Bertrand de Jouvenel. These are preceded by a lengthy introduction by the editor and followed by two papers, both previously published in scholarly journals, by Ashton and W. H. Hutt, Professor of Commerce in the University of Capetown.

Hayek's introduction, entitled "History and Politics," states the theme of the volume in language which readers of his *Road to Serfdom* will recognize; e.g., "It is probably justifiable to speak of a socialist interpretation of history which has governed political thinking for the last two or three generations . . ." (p. 7). Such loose usage, insinuation, and innuendo are rife throughout the introduction, nor are its victims confined to the group of "socialists" whom he is primarily castigating; he likewise refers in derogatory terms to the distinguished historian of liberalism, Guido de Ruggiero, and "another supposedly liberal historian," Élie Halévy (p. 11).

Professor Ashton's essay on "The Treatment of Capitalism by Historians" is much more temperate, and interspersed with quotations from students' examinations as a measure of comic relief; but it is equally far from proving the existence of either conspiracy or bias on the part of historians generally. Indeed, it appears

that his convictions on this point are formed almost wholly as a result of his summers spent in reading examinations. (Surely one can sympathize if the experience has become traumatic.) The majority of living historians whom he cites are actively engaged in research to clear up the ignorance and misconceptions which still exist about the period of the industrial revolution.

Hacker's essay betrays, among other things, the fact that although his political views have changed radically in the two decades since he was an editor of *The Marxist Quarterly*, his intellectual method is still the same. Lumping all American historians into one homogeneous mass, he declares that their "anticapitalist bias" originates in "their espousal of Jeffersonian as posed to Hamiltonian ideas" (p. 84). Charles A. Beard (a considerable capitalist himself) is the principal villain; there is no mention at all of that large and growing group of writers who, from Horatio Alger to Allan Nevins, have glorified and dramatized the businessman as a national folk hero. Hacker's notions of what constituted a proper economic policy in the nineteenth century—protective tariffs, government support of railroads, etc.—are at marked variance with the views of his collaborators, and, for one who is presumably defending *laissez faire*, further demonstrate his complete intellectual confusion.

De Jouvenel's stimulating essay on "The Treatment of Capitalism by Continental Intellectuals" provides a pleasant contrast to Hacker's bit of shoddy, but in the end it sheds more light on the viewpoint and values of its author than of the anonymous intellectuals with whom it purports to deal. The intellectual, he says, is antagonistic to capitalism because his own product, when subjected to market forces, languishes unsold and unsalable on the shelves. This is an arresting idea, but like those of the other authors of this volume, it assumes what has yet to be demonstrated, namely, that intellectuals as a group are biased against the economic institutions of the modern age.

The previously published papers of Ashton and Hutt deal, respectively, with "The Standard of Life of the Workers in England, 1790–1830," and "The Factory System of the Early Nineteenth Century." Each is worthy of comment, but there are a number of other, more important, aspects of this book which are also deserving of greater consideration than space permits. Among them is the question of the usefulness or relevance of the term "capitalism" in historical writing: like "communism" or "democracy" in the mouths of American demagogues or Soviet officials, it can be twisted to any meaning the user wishes.

Another important matter is the question of "objectivity" in the social sciences. Hayek and Hacker, apparently, would have us abandon the search for it altogether. Indeed, one suspects that their basic complaint against "the historians" is the persistent refusal of the latter, by and large, to "take sides" either for or against capitalism. (See, especially, pp. 5–6, 79, 90.) But these are not the only men in this day and age who seek to appropriate for their own purposes the message of *Luke 11: 23*.

The fact remains that there is a lag in the dissemination of the results of scholarly research to the wider world—even to the wider world of scholarship. The slowness with which the results of more painstaking research on the period of the

industrial revolution have caught up with the earlier interpretations, couched almost exclusively in terms of the increasing misery and degradation of the masses, is but one example. But to attack the problem as though it were the result of a subversive plot—and this is certainly the impression created by Hayek and Hacker—will not solve it. On the contrary, the most likely outcome of such a procedure—if the book is to have any effect at all—will be the alienation of the vast majority of scholars who would otherwise maintain an open mind. Academic McCarthyism is no more a cure for the errors of scholarship than the real thing is for errors of political judgment and statecraft.

University of Wisconsin RONDO E. CAMERON

Demand Analysis—A Study of Econometrics. By Herman Wold in association with Lars Juréen. New York: John Wiley & Sons; Stockholm, Sweden: Alqvist & Wiksell, 1953. Pp. xvi, 358. $7.00.

It is venturesome for a nonmathematical statistician and economist to undertake a review of a book in econometrics. We shall, however, have to face up to these mathematically minded invaders some day, and the sooner we get acquainted with them the better. Of course the temptation is great for a nonmathematician to sound off about the concentrated mathematical style which makes such books very difficult to read. Even the most important definition is likely to be hidden in a formula which uses symbols defined in another formula, and so on back until one comes to a symbol which must be looked up in another book or article that is not in the university library. However, I shall not go further into this.

One should not expect to understand this book, especially Parts II to IV, unless he is acquainted with such terms and expressions as "ergodic," "Borel family of sets," "hysteresis," "discontinuous spectral function," along with the usual equipment of mathematical economic theory and modern statistical theory including recent developments in the analysis of time series. Anyone with the proper background, however, should find this part of the book stimulating and useful.

Part I, consisting of 80 pages, is a broad survey of topics and findings. It consists partly of a discussion of the propriety of using regression lines in the study of demand elasticities and for other econometric purposes. In general the authors defend regression methods which some have considered unsuitable for these tasks. They show that the confusion over the existence of two regression lines in a correlation problem can be cleared up by a more careful analysis of the economic model, a more careful determination of the direction of causation. It is shown that regression coefficients are unbiased asymptotically for large samples under very general conditions. It is indicated also that recent developments such as autocorrelation analysis make possible the use of the results of correlating time series. This is especially true of "stationary time series," which are apparently those whose fundamental patterns do not change over time. The general warning is given that "the economic sector under analysis must satisfy certain qualifying conditions if the regression coefficients obtained are to be regarded as genuine demand elasticities" (p. 58).

The idea of "recursive systems" for supply, price, and demand is developed which are defined as follows: (1) if the development of the three variables is known up to the time t-1, the system gives us the variables at time t; (2) the variables at time t are obtained one by one; (3) and each equation may be interpreted as a hypothesis of unilateral causal dependence (p. 14). The approach is statistical in that the authors insist that "Disturbances should as a rule be introduced in hypothetical models" (p. 15) and in that the aim is always to make possible the development and testing of models from actual data.

The authors proceed on the basis of the Paretoan theory of preference fields, in which utility is not regarded as an additive quantity, or even as a quantity at all, but as a scale of ordered preferences. This theory is chosen because "from the point of view of experimental psychology the axioms are meaningful in the behavioristic sense" (p. 77). Their remarks on this subject "are in line with the general theory of knowledge as embodied in logical empiricism" (p. 78–79). This is in refreshing contrast to the approach of many econometricians.

The final 70 pages of the book, Part V, contain examples of elasticities computed from family budget data and from market data. The second author has been since 1947 in charge of the Research Bureau of the State Agricultural Marketing Board of Sweden, and has supervised both the examination and revision of the original data and the calculations involved. The family budget data are from three major surveys carried out in Sweden in 1913, 1923, and 1933, respectively. The market data cover the interwar period 1921–1939, also in Sweden, and are, like the family budget data, confined to foods. An interesting table (p. 303) shows the price and income elasticity of total calorie intake. In general the authors conclude, from a tested forecast of Swedish consumption in 1949, based upon price and income elasticities from market data from 1930–1939, that there is evidence of a remarkable stability in the demand structure. "In spite of the substantial changes in consumption that were caused by the rationing and general shortage during World War II, consumer demand did in fact after the crisis resume the old structure" (p. xi). I wonder whether the same would be true of the United States. Here we have had a virtual revolution in income distribution, which must have had some effect upon elasticities.

Parts I and V of this book are a "must" reading for modern economists. Perhaps they should have been published as a separate book, so as not to scare away the uninitiated from this example of important developments in the application of economic and statistical theory. As data begin to pile up, some one is going to subject economic theories to statistical tests, and we should be able at least to understand what they are trying to do.

University of Nebraska EDGAR Z. PALMER

Income Stabilization for a Developing Democracy. Edited by Max F. Millican. New Haven, Conn.: Yale University Press, 1953. Pp. xxi, 730. $5.00.

This book is an attempt to get economists, political scientists and lawyers to do some cooperative thinking on the problem of economic stabilization and to present their thought in a form suitable for the ordinary citizen. The objective of the book is not only to explain to the citizen contemporary economic thought

on the matter of economic stability, but also to discuss such often neglected matters as the impact of stabilization policies upon the other policy objectives of a democracy and also the limitations imposed upon economic policy by the political, institutional and social framework within which stabilization policies must operate.

The final product in the form of fifteen chapters on the framework, policy instruments, correlative goals and political processes involved in the matter of income stabilization was presented for a round table discussion to a public group composed of a Congressman, a labor research worker, a civic leader, a banker and several businessmen. The last chapter of the book is a report on the comments made by these good people in a session with the editor and several other faculty members who were not contributors to the book. In the reviewer's estimation the public critics showed an amazing lack of intellectual humility. Although several of the authors had at times in the course of their chapters written for their colleagues rather than for the public, the public members apparently never confessed any difficulty in following the writing. Their comment instead was that the presentation should be shortened and simplified. Particularly did they raise this criticism against Millican's attempt in just fifty-eight pages to explain the measurement and determination of national income in a piece of writing which, while calling for perseverance upon the part of the general reader, is certainly a masterful piece of exposition which should be consulted by all teachers of elementary economics. On the policy level the public felt that the panel had not given sufficient emphasis to the role of individual initiative in meeting the stabilization problem. To the reviewer this session reveals a frightening gap between the work of economists and the public's receptivity to such work even when a thorough job of exposition has been done. More work of this educational type simply must be done if the public is ever to accept the policies that may be necessary for maintaining economic stability.

The stabilization policies explained by the authors are sophisticated ones that are derived from what Paul Samuelson and others now term "neo-classicism.' At every point the innumerable routes to full employment that are available are emphasized and no doctrinaire position is taken on how economic stability may be best achieved. Such able thinkers and expositors as Colm, Hagen, Hart, Lindblom, Samuelson and Shoup expound the economic theory of income statilization, yet at the same time give due consideration to political and administrative matters which are further treated by the political scientists and lawyers Brown, Coker, Dahl, Jones, Lasswell, Lenhart and Rostow. In all, the volume is a most impressive piece of work even though, as the editor admits, the authors were not able to obtain due to limitations of time and place the full measure of cooperative thinking and integration of thought for which the editor had hoped.

I have found that parts of this book serve as an excellent text for an undergraduate course in economic stabilization. The book should also be read for its treatment of the administrative and political problems involved in stabilization measures. Lastly, the contributions of several of the economic luminaries should provide the economist who specializes in other fields with some good general reading in the subject of economic stability.

Texas A. & M. College A. MORGNER

The Economics of Defense: A Primer of American Mobilization. By Richard V. Clemence. Harrisburg, Pa.: Stackpole Co., 1953. Pp. x, 138. $2.25.

In this small volume, Professor Clemence presents a skeletonized picture of the operation of our economy in peacetime, under full mobilization, and under partial mobilization. Most of the discussion is devoted to the latter situation. The presentation is built around a highly oversimplified model of the American economy. The pressures created by partial or full mobilization are then described. Shifts in resources, inflation, indirect controls, and direct controls are discussed within the framework of a defense economy and in terms of the model.

A substantial part of the analysis is well presented (particularly the discussions of the operation of the price mechanism). It provides a simplified picture of our economy in action. However, statements such as those noted below suggest that the volume must be used with great care.

For example, Professor Clemence notes that money flows from households to firms through the market for consumers' goods. "As this money reaches the firms not much of it leaves the area immediately to become household income again. Most of it instead passes from one firm to another in payment for raw materials, supplies, and equipment needed to renew what is depreciating," (p. 21). But what about the wages and salaries which these firms pay out promptly? In some industries the proportions are very high (e.g., bituminous coal more than 60%, basic steel more than 40%, all manufacturing industries about 25%).

Similarly, in discussing the effects of sales taxes, the author asserts that because firms receive less than consumers pay—with the difference paid to government—the firms return "to households as income this much less than the households have spent. On the second round, therefore, consumers have less money to spend than they had at the beginning, and the prices they pay for consumer goods tend to fall," (p. 104). But this analysis overlooks the fact that the taxes received by the government also are spent and return to the income stream.

I am reminded of Professor Woytinsky's observation concerning models. He noted that they are just like magician's hats, you get out of them what you put into them. An oversimplified model inevitably means some distortion when one attempts to fit our complex economy into its framework.

A number of other questionable assumptions and statements are made, of which the following are illustrative:

1. Indirect controls are defined "as those already existing in the peacetime economy" while direct controls are "imposed for the purpose of developing the defense economy," (p. 89). What about peacetime agricultural controls?

2. It is stated that peacetime prosperity is "always" (p. 87) accompanied by mild inflation, which is defined, "as an increase in the price level of consumer goods" (p. 63). What about the decline in consumers' prices from 1926 to 1929?

3. It is stated that member banks can replenish reserves by selling their government bond holdings and that this can offset sales of governments by the Federal Reserve Banks (p. 97). But obviously if the Federal Reserve Banks are selling governments on balance, the member banks can only sell their governments to those whose purchase will not affect total bank reserves.

4. It is asserted that "The prices of consumer goods rise faster than the wages

and other payments to households" (pp. 75, 82). This wasn't true in World War II or during the Korean War (1950–53).

5. "A comparatively *small wave* of original investment may thus set in motion a cumulative process of expansion that will product capitalist prosperity *for a number of years*" (p. 22). (Italics added.) This statement gives an importance to the effects of the multiplier and acceleration principle which is not confirmed by experience in past cycles.

Similarly, challengeable statements are made about centralized planning (p. 35), the definition of inflation (p. 63), demands for higher wages (p. 77), the effects of inflation (pp. 79–80), the burden of inflation (pp. 86–87), bank reserves (p. 92), effects of high luxury taxes (p. 102), and allocations (p. 126).

Professor Clemence had a good idea, but the execution is inadequate.

New York University JULES BACKMAN

A Study in Trade-Cycle History: Economic Fluctuations in Great Britain, 1833–42. By R. C. O. Matthews. New York: Cambridge University Press, 1954. Pp. xiv, 228. $5.00.

This monograph, as its title indicates, is a study of short-period fluctuations in the British economy during the period 1833 to 1842. The author, Fellow of St. John's College, Cambridge, and Lecturer in Economics in the University of Cambridge, disavows any attempt to test a particular theoretical model of the trade cycle. He endeavors, rather, to secure from the facts themselves answers to such questions as, What were the magnitudes that fluctuated: real income, production, employment, prices, profits, or all of these? Were the fluctuations that took place of similar character and timing in different sectors of the economy? What were the main factors contributing to changes in the level of effective demand and in productive capacity? All comprehensive trade-cycle models, of course, are designed to provide answers to questions of this nature, so we have here a test for all relevant models.

Mr. Matthews has made a happy compromise on arrangement—always a thorny problem for the trade-cycle historian. He works broadly according to subject, but in his final chapter he outlines the main patterns of the cycle and evaluates the importance of the factors previously discussed. The six chapters following the introduction deal with various aspects of Britain's balance of overseas trade and with the influence of the balance of payments on the domestic economy. Because of the important position of the United States in this trade, a study of fluctuations in the American economy is made and the author attempts to trace the interactions of the British and American economies. The next three chapters are given to a study of cyclical movements in several leading industries which were of particular importance in influencing short-period fluctuations in national income. The railways and the cotton industry come in for especially intensive study. One chapter is devoted to banking and monetary phenomena, and in the final chapter, as indicated previously, an assessment is made of the importance of the various factors in the transition from one phase of the cycle to the next.

While confirming the validity of many of the interpretations made by other

historians of this period, Mr. Matthews draws substantially new conclusions on several points. (1) He finds that there was no direct causal link between concurrent cyclical changes in the United States and Great Britain. Economic fluctuations in the American economy were fundamentally of an internal nature—largely the result of developments in the spheres of banking and land speculation—while the mainstay of the British cycle was domestic investment. But though the British cycle would have run its course, regardless of transatlantic influences, fluctuations in the United States had an important influence on the timing and amplitude of British cyclical movements. (2) Railway investment during the first part of the boom was little influenced by fluctuations in trade. The successful experience of the Liverpool and Manchester Railway, rather, was the spark which fired the imagination of railway promoters and led to the initiation of a series of investment programs. The second phase of railway investment—which the author calls the "mania" phase—was, however, linked directly to the state of trade and optimistic expectations. (3) The output of several commodities, notably cotton, coal, iron, and possibly woolens and worsteds, failed to conform to the cyclical pattern: total production rose steadily well into the contraction phase of the cycle. This short-period inelasticity or negative elasticity of supply is attributed primarily to relatively heavy overhead costs, coupled with high elasticity of demand for the output of individual firms. (4) The continued rise in railway investment and commodity output provides the author with a link between the two "heads" of the cycle (1836 and 1839), while the lag of railway building behind other cyclical developments is emphasized in explaining overexpansion of manufacturing capacity and the severity of the ensuing depression.

The author employs what he calls the "quantitative-historical" approach. This reviewer is of the opinion, however, that "quantitative-historical" does not represent adequately the method used. It describes not at all well the admixture of imagination and insight which, on the basis of the (often scanty) statistical and historical evidence available, bears such generous fruit. In view of his competence for the task, one can only wish that Mr. Matthews had thrown his net wider and developed further the comparison of the 1833-42 cycle with other cycles, particularly those immediately preceding and following, and with secular trends.

Anyone pledged to a monistic explanation of the trade cycle will find in this work scant substantiation for his thesis, but readers alive to the complexity of cyclical economic behavior will gain many illuminating insights.

University of Wisconsin MAX E. FLETCHER

The Economic Impact on Under-Developed Societies: Essays on International Investment and Social Change. By S. Herbert Frankel. Cambridge, Mass.: Harvard University Press, 1953. Pp. vii, 179. $3.25.

This slim volume consists of nine essays by the distinguished holder of the Chair of Colonial Economic Affairs at Oxford University. All have been published previously, though not (in every case) in sources readily accessible to American economists. Except for minor revisions they are reprinted in their

original form. As the subtitle indicates, these are "Essays on International Investment and Social Change."

The first five selections approach the subject in its broadest aspects. Essay I ("The Concept of Colonization") was the author's inaugural lecture at Oxford. In it he rejects two common views of colonies: the narrow Mercantilist emphasis on economic gain to the mother country, and the notion of colonies as replica societies settled by citizens of the mother country. Instead he insists that colonization is a process of transformation involving a mutual interaction between colony and mother country; it is nothing but growth itself. Growth requires new structures, and colonization is the process by which they are evolved. In Essay II ("Some Aspects of Technical Change") this theme continues. Technical change, says the author, "... is but one aspect of mutually determined, and mutually determining, processes of growth on many fronts of the social structure as a whole" (p. 23). Further, it is a time-consuming process, and any attempt to avoid gradualness will result in social maladjustments.

The third essay ("Concepts of Income and Welfare and the Intercomparability of National Income Aggregates") stresses the difficulties in making international income comparisons. Income is not a welfare concept, according to Professor Frankel; rather, it is an accounting concept, and the accounts of different societies are not comparable. This is reiterated in Essay IV ("Some Aspects of International Economic Development of Under-developed Territories"), where the view is advanced that neither aggregate nor per capita income estimates provide suitable criteria for international investment decisions. Professor Frankel deplores the tendency to base such decisions on political rather than economic criteria. The mere provision of capital, he argues, is not necessarily advantageous to a recipient society; past development schemes have succeeded largely because of migrations of human beings rather than of capital; and rapid development programs based on heavy capital injections can only result in severe dislocation of the present populations of these countries in the dubious hope of a better future. The author thoroughly rejects this approach to economic development.

Perhaps the most pungent expression of Professor Frankel's philosophy is found in Essay V ("United Nations Primer for Development"). Here he attacks on many grounds the experts who authored the United Nations report on *Measures for the Economic Development of Under-developed Countries:* (1) for their extreme over-simplification of the problem, (2) for their stagnationist belief in the abundance of capital in more developed countries, and (3) for their illiberal emphasis on authoritarian planning.

Essays VI ("Whither South Africa?"), VII ("Investment and Economic Development in the Continent of Africa"), VIII ("The Kongwa Experiment: Lessons of the East African Groundnut Scheme"), and IX (("Some Reflections on Civilization in Africa") are concerned specifically with African development problems. These, in my judgment, comprise the most interesting and valuable sections of the book, based as they are on the author's great familiarity with his subject matter. In contrast to the other essays, they are not repetitious (which is unavoidable, perhaps, in such a collection), are effectively written, and do not

labor what seems evident. Professor Frankel's analysis of the failure of the British peanut-growing program (Essay VIII) is particularly noteworthy; it clearly presents in a concrete context most of his views on economic development.

Orthodox liberals will derive considerable comfort from this volume. Unfortunately, however, the book itself demonstrates unintentionally the soundness of Professor Frankel's general suspicion of abstractions: less philosophy and more specific analysis would have made a more useful book.

Vanderbilt University RICHARD T. SELDEN

Price Making and Price Behavior in the Petroleum Industry. By Ralph Cassady, Jr. New Haven, Conn.: Yale University Press, 1954. Pp. xx, 353. $4.00.

This new book by Ralph Cassady, Jr., Professor of Marketing at the University of California, Los Angeles, is an outstanding addition to the literature on the economics of the petroleum industry. Not since Joe Bain's three volume work on the Pacific Coast Petroleum Industry has a volume been met with such eagerness by those interested in this industry.

As the title of Cassady's book indicates, an attempt was made to explain price making and price behavior in the petroleum industry. He deals effectively with the determinants of pricing policy at all stages in the production process. His greatest contribution is in the form of institutional information on the industry obtained from extensive interviews with those who establish the pricing practices and policies of the petroleum industry.

The first five chapters of the book provide the background material necessary for the consideration of pricing practices in this particular industry. Chapters 7 through 15 discuss the pricing of petroleum products at each level of production. The dynamics of price behavior over time is dealt with less adequately. There follows a discussion of the relationships existing among geographical territories and between various petroleum products. The book ends with a social appraisal of the observed behavior and conclusions as to the adequacy of competition in the petroleum industry.

A source of strength, but also a disturbing element, of the book arises from the fact that the author had access to information not generally available to students of the industry. The author was able to interview top-level executives in the petroleum industry on a very broad scale. The author's conclusions on company pricing policies are formed against a background provided by these interviews. Unfortunately, much of this information was confidential and could not be passed on to the reader. The result is that the reader is unable to question the validity of a conclusion reached on the basis of data which he cannot peruse, but neither can he accept the conclusion as anything more than the considered opinion of one scholar.

The circumstances under which this volume was written promise to make it both widely read and highly controversial. In 1948 the Yale University Press published Eugene V. Rostow's book, *A National Policy for the Oil Industry*. A critical evaluation of Rostow's book is not within the scope of this review, but it is important to note that the book was not favorably received by the oil industry. In

1949 the American Petroleum Institute initiated an elaborate program "to further a general understanding of the economic structure and behavior of the petroleum industry." As explained in the preface to Cassady's book, the Yale University Press agreed to be the administrator of funds provided by the API which were to cover the cost of thorough investigations of the industry by competent scholars. This volume is the first in a series of three Monographs to be published under the grant. Erich W. Zimmerman of the University of Texas is writing on the subject "Production and Conservation," while Melvin de Chazeau and Alfred E. Kahn, both of Cornell University, are collaborating on a study of "Integration in the Petroleum Industry."

Cassady does a very satisfactory job of explaining the relationships which exist between the prices of the major petroleum products. He is at his best when dealing with the later stages of the productive process. The section on the pricing of crude petroleum is handicapped by the fact that Professor Zimmermann is working independently on the volume which should have logically preceded the study of pricing. The domestic supply of crude is explicable only in terms of the conservation laws of the major producing states. Foreign supply as a determinate of domestic price was considered beyond the scope of the book. Cassady is, therefore, unable to deal significantly with the *level* of prices.

The conclusions reached by Cassady are: (1) price making in the petroleum industry covers many types of pricing arrangements, (2) a considerable number of alternative sources of petroleum products exists in most markets, (3) the main motivating force in the industry is individual competitive effort, (4) there is a substantial degree of freedom of entry by rival competitiors at all distribution levels, and (5) it would be unfortunate if the "vigorous independent element" in the industry "were to disappear or even diminish in numbers or in vigor."

His major policy recommendation is that "Legislative or judicial action designed to shackle the activities of big business per se should have no place in our public policy." Provocative discussions are sure to develop from this broad recommendation. The book is well written and merits the attention of economists interested in pricing behavior at both the industry and the firm level.

Oklahoma A. and M. College EUGENE L. SWEARINGEN

Louisiana's Industrial Tax Exemption Program. By William D. Ross. Baton Rouge, La.: Division of Research, College of Commerce, Louisiana State University, 1953. Pp. 87.

In their desire to obtain new industrial plants and payrolls many southern states have resorted to the use of tax concessions as a lure. Only North Carolina and Texas among the southern states have not experimented at one time or another with this device. Dr. Ross's study provides a comprehensive review of the experience which Louisiana has had with its tax exemption program between 1946 and 1950.

Dr. Ross appraises first the legal basis of the Louisiana program and the way in which it has been administered. Fortunately, the Louisiana program is centrally administered and the file of applications for tax exemptions is readily avail-

able to the investigator. Dr. Ross, employing the questionnaire method, canvassed all firms which had received tax exemptions. His questionnaires were designed to determine the probable influence which tax factors had upon the locational decisions of the various firms. It is rather surprising that the majority of firms clearly indicated they would have gone ahead with their development programs in the absence of tax exemptions. Only a little more than 15 per cent of the firms indicated that they would not have undertaken their new development in the absence of the tax exemption program. In terms of the dollar value of the new investment involved in the program, it appears from Dr. Ross's survey that Louisiana has definitely gained only $25,000,000 of new investment as a result of the operation of the program during the four year period under review. During this period tax exemption was provided for $355,000,000 of new investment.

Perhaps the most significant part of the study is the estimate of the cost of the program to Louisiana's state and local governments. Here the results which Dr. Ross obtains are striking. He estimates the total annual cost of the tax exemption program in terms of the tax revenues which both state and local governments lose by furnishing industrial tax exemptions and this figure approximates $11,000,000 each year. When this annual revenue loss is compared to the relatively small amount of new investment attracted by the program, it is necessary to question its value. Dr. Ross wisely suggests that a reappraisal of the entire state and local tax system in Louisiana is needed. Such a study might be directed toward eliminating the tax exemption program and providing a tax structure which is more competitive with other states. Certainly this would appear to be a much more satisfactory solution to the problem of attracting new industry than the present exemption program.

By his careful analysis of the Louisiana program, Dr. Ross has performed a significant service for his state. In addition, his study should have the desirable effect of encouraging economists in other southern states to critically appraise tax exemption programs.

University of Florida JOE S. FLOYD, JR.

Excess Profits Taxation: Symposium. By Alfred G. Buehler and others. Princeton, N. J.: Tax Institute, 1953. Pp. viii, 183. $5.00.

This volume contains papers dealing with the excess profits tax delivered at a Symposium conducted by the Tax Institute in December, 1950, when the question of imposing such a tax was before the Congress. The participants in the Symposium include individuals from the academic and the business worlds, and one, Senator Flanders, from the realm of politics. It is significant that no member of the group approves of the tax, although, as might be expected, the academicians are more restrained in their disapproval than the business representatives; their reaction probably being best expressed by Beardsley Ruml's comment that (it) "is an evil brew of inequity, exception, exemption, and privilege."

Some of the topics with which the various papers deal with more or less adequacy are (1) the nature and characteristics of an excess profits tax, (2) appraisals of some alternatives—across-the-board increase in corporate rates and partial

integration of corporate and personal taxes, (3) the essential features of the specific tax laws in effect during the First and Second World Wars, as well as the one proposed in 1950, (4) the theoretical and practical economic arguments against the tax, (5) the political and psychological arguments in favor of it during wartime, (6) the problems involved in administrating any form of the tax which might be instituted, (7) the general economic effects—it is predicted that the proposed tax then before Congress would cause wholesale waste of resources, aggravate inflation, inhibit needed expansion, and prevent the growth of small companies (this latter because of the use which large companies would make of "cheap dollars created by the tax law"), and (8) the possible effects of the tax on several different kinds of businesses—television, utilities, banking, retailing, special tooling, and railroads.

The issue of the excess profits tax is dead for the moment, but given the world situation as it is, the chances of it arising again are considerable. If it does, then this volume could prove of much value in assisting us in understanding what is involved and thus in arriving at a saner solution to the problem than has hitherto been the case.

University of Alabama ERNEST F. PATTERSON

Principles of Private and Public Planning: A Study in Economic Sociology. By Wilhelm Keilhau. New York: Burt Franklin, 1952. Pp. 272. $3.75.

Dr. Keilhau is probably little known to American economists although he has been president of the Norwegian Economic Society since 1937, a member of the first executive committee of the International Economic Association, president of the Norwegian delegation to the Bretton Woods Conference in 1944, and at present is a professor at Oslo University.

This study, first published in England in 1951, has since been followed, but not superseded, by a number of related works (including the recent book, *Politics, Economics and Welfare*, by Robert A. Dahl and Charles E. Lindbloom). It is a stimulating treatise and it merits the serious attention of economists interested in economic theory, comparative economic systems, and taxation as well as economic planning. In common with much of the growing literature in economic planning, this study argues that the use of the phrase "planned economy" as a synonym for central direction and control of economic activity by the state is erroneous and misleading, that a planless economy does not and never did exist, and that every economic activity is planned.

Within this framework, economic planning involves the full range of decision-making in economic affairs and in all types of societies. This study as a scientific exposition of the theory of economic planning can therefore be characterized as a broad study in economic theory. Its two main objectives according to Dr. Keilhau are (1) to discuss the primary or supreme economic purposes and (2) to describe how individuals or groups of individuals plan in order to realize these purposes. It attempts to state the general principles of such planning and it concludes that the same principles apply to private as well as public economic planning.

The subtitle of the book, "A Study in Economic Sociology," stresses, however, that this study "does not deal with any 'model world' which can be described in the fine language of exquisite mathematical symbols, but only this changing, erratic world of erring human beings which every planner is bound to face" (pp. 5–6).

The book is divided into two parts. Part I deals with the principles of private planning and part II extends the principles to systems of public planning. The unorthodoxy and breadth of Dr. Keilhau's approach is indicated by the chapter titles in part I which include, "Economic Impulses and Their Psychic Sources," "Sacrifice and Compensation," "The Preparatory Plan-Thinking," and "The Calculation Problems of the Planner." In part II, public planning is examined in relation to power policies and ideologies such as socialism and liberalism, as well as the principles of private planning.

Economic theory is discussed provocatively throughout the book. Dr. Keilhau examines the fundamental difficulties caused by the uncertainties of the future and of human behavior. And he shows how established economic laws present themselves to the planner in a very different shape from that in which they appear in current economic theory. Several stimulating observations on economic theory can be cited.

> In economics, it is only too often overlooked that negative resolutions may be of importance. Current theories generally restrict themselves to dealing with certain totalities of action, withholding the fact that the decision not to act may have far-reaching economic consequences (p. 24).
>
> Curent theory has been inclined to treat only property risks as economic, whilst the risks of labourers have been regarded as constituting a social problem only (p. 65).
>
> Profit as a category of income does not refer to any special "factor" or "agent of production" like instrumental goods, but to the planned and effected coordination of those factors or agents in an organized economic activity. There is, accordingly, no causal connection between the specification of productive factors common in economic theory, and the origin of capitalistic profit (p. 115).

The discussion of comparative systems is also nontraditional. "Societies are not capitalistic or noncapitalistic" (p. 136). They are either state capitalism, private capitalism, national capitalism, or some mixture of various capitalistic forms. Socialism and communism are generally regarded as closely related but Dr. Keilhau argues persuasively that they are ideological and economic contrasts. As a believer in liberalistic ideologies, Professor Keilhau recognizes that a role always exists for both private and public action. But he argues for a changeable dividing line between the public and private sectors of the economy and for maximum decentralization of economic decision-making. The hazards of uncoordinated economic planning by free enterprise can be averted, according to Keilhau, by affirmative government programs to improve the economic information available for private decision-making. "Future economists may look upon the business cycles of earlier days more as cycles of ignorance than as cycles of recurrent unavoidable crises" (p. 271).

A brief excursion into financial and monetary planning also raises some inter-

esting questions. For example, Dr. Keilhau points up the conflicting principles of tax policy which are presently receiving major political attention in the United States. Should taxation be based on the principle of equity as related to economic status in the past or should the major goal of tax policy be related to future economic expansion goals for the economy? (P. 249.)

The first part of the study is difficult reading due both to the different approach and to the unique and unfamiliar labels that the author gives to concepts and principles. But the book as a whole is stimulating and well worth the effort. The writer, however, would not endorse the publisher's claim that "Dr. Keilhau will be read with understanding and enjoyment by businessmen and lawyers as well as economists."

Tennessee Valley Authority STEFAN H. ROBOCK

Community Power Structure. By Floyd Hunter. Chapel Hill, N. C.: University of North Carolina Press, 1953. Pp. 297. $3.50.

This stimulating study of power relationships in contemporary America will contribute little to the broad outlines of our understanding of what has come to be called the "pyramid of power"; its value lies rather in the contribution it makes to the empirical foundation undergirding much that has been "known" deductively rather than inductively. Thus it comes as no surprise to learn that community decisions are made by a few, and that these few are typically the economically powerful.

Within this area of understanding that is broadly confirmed by Professor Hunter's analysis, however, there are details which have been less fully understood. For example, it would not have been at all unanimously agreed that professional people in general and educators in particular occupy as inferior a position in the power hierarchy of modern society as is apparently the case. On the other hand, this empirical finding can be defended deductively. Starting with Peter Drucker's conception of the modern corporation as the dominant institution in American culture, it could convincingly be inferred that other institutions (education, religion, *etc.*) would fall under the shadow of their more powerful colleague.

Of course, these findings are no more sound than the methodology on which they rest, and with respect to this question the sociologists will no doubt have much to say. Here it is only necessary to point out that the basic technique used is sociometry—a device recently developed for the purpose of measuring "quantitatively" the intensity and direction of interpersonal relationships. By asking such questions as "If a project were before the community that required *decision* by a group of leaders—leaders that nearly everyone would accept—who would you choose?" A long list of high-ranking people in the community was narrowed down to a relatively small number of upper-level decision-makers. This technique was then extensively supplemented by field interviews designed to furnish still more concrete data relating to the decision-making process. It is probable that sociometric methods have not previously been applied to so large a problem, and hence this may well be a landmark study from the standpoint of the evolution of sociological methodology.

While most social scientists will be able to find valuable ideas in this volume—whether among the findings or in the methodology—most will also be disappointed in the conclusions Professor Hunter reaches. The work suffers from what appears at first glance to be a naive conception of democracy. Thus the author seems to feel that democracy is weakened to the extent that decisions are made by a small minority rather than by "the people." In view of the fact that political scientists no longer doubt that even modern democracy must operate within the framework of a narrow hierarchy, this is a weak frame of reference for so excellent an empirical study.

However, a more careful examination suggests that this is not the primary difficulty. The trouble is rather that the author, unfortunately, endeavored to hide the identity of the community he was studying. This is unfortunate because the attempt at disguise tends to obscure two fundamental facts about the power structure of the community studied, while at the same time the disguise itself is painfully transparent.

In the first place, the fact that the community studied is a large city in the Southeast places it in the area dominated by one-party politics, and as a result democracy may be weak there not because the few rule but because those who rule are not subjected to significant competition for their leadership statuses. In the second place, and possibly a closely-related factor, this is an area in which organized labor has not yet become an important element in the power structure. If less emphasis had been placed on disguise and correspondingly more attention given to factors such as these, the conclusions reached might have been more meaningful.

In conclusion, it might appropriately be noted that Professor Hunter's book is in a quite unintended and unorthodox sense, a tract for the times. Repeatedly one hears it said that the professors in Germany offered no resistance to the advance of Nazism, and often this observation is made with some show of amazement. But if the structure of power relationships presented in *Community Power Structure* is typical for an industrial society (and there is no reason for supposing the contrary), this phenomenon is easy enough to understand; academicians stand too far down on the power ladder. In 1954, as the profession comes face to face with the most intense stage of the present "loyalty" campaign, these facts may be worth remembering.

University of Georgia HOWARD R. SMITH

PERSONNEL NOTES

Lee Bidgood, who has been professor of economics since 1913 and dean of the School of Commerce and Business Administration of the University of Alabama since 1919, will retire at the end of this summer. Dean Bidgood was one of the founders of the Southern Economic Association and was its second president, serving in 1930–1931.

Howard S. Dye, professor of economics at the University of Tennessee, has been appointed Tennessee correspondent for the *Southern Economics Journal.*

Richard F. Ericson, head of the Department of Economics at Stetson University since 1952, has been promoted to professor of economics.

C. Addison Hickman, professor and head of the Department of Economics at North Carolina State College of the University of North Carolina, has been appointed an editor of the *Southern Economic Journal.*

Joseph E. Lane, of the Department of Accounting at the University of Alabama, will take a year's leave of absence to work toward a law degree.

F. E. McVay has resigned from his position at North Carolina State College, University of North Carolina, and from the board of editors of the *Southern Economic Journal* to accept a position as statistician with the Bureau of Ordnance, U. S. Navy. He has been a member of the board of editors since December 1948.

William David Maxwell, part-time instructor and graduate student in economics at the University of North Carolina, has been granted a fellowship by the Earhart Foundation for graduate work in economics during 1954–1955 at The Johns Hopkins University. He took his bachelor's and master's degrees in economics at the University of North Carolina.

Frederick S. Morton has been appointed director of the newly established Department of Business Administration at Davidson College. This new department was separated from the Department of Economcis.

Walter Ogilvie, formerly of the University of Alabama, was a visiting instructor in business administration at Louisiana State University for the second semester of the current session.

John T. O'Neil, associate professor of finance at the University of North Carolina, will be on an assigned leave of absence from the University from June 1954 to June 1955 as recipient of a fellowship award from the Scott Paper Company, where he will assist the vice president in charge of finance.

James E. Parks, assistant professor of marketing at the University of Mississippi, has been granted an extension of his leave of absence so that he might continue study at the Harvard Graduate School of Business.

Robert W. Paterson, associate professor of economics in the School of Business Administration, University of South Carolina, has been appointed associate editor of *Business and Economic Review.* This new publication will be issued monthly, except July, August, and September, through the Bureau of Business and Economic Research, School of Business Administration, University of South Carolina.

Karl D. Reyer, professor of business administration at Louisiana State University, was on sabbatical leave visiting the marketing departments of a number of major American universities during the second semester of this year.

Harry Ross has resigned as assistant professor of business administration at Mississippi Southern College to accept a position with the duPont Corporation in Wilmington, Delaware.

Joseph J. Spengler, professor of economics at Duke University, will present a paper at the World Population Meeting in Rome, Italy in September.

Bruno K. Suviranta, head of the Political Science Department at the University of Helsinki and visiting professor of economics at the University of Mississippi during the first semester of 1953–54 under a John Hay Whitney scholarship, was at the University of Kansas during the second semester.

Wendell P. Trumbull, professor of accountancy at the University of Mississippi, was granted a leave of absence for the 1954–55 school year to be on the Chicago staff of Arthur Andersen and Company, national public accounting firm, in their cooperative program offering broad experience to selected college and university accounting teachers.

Herbert von Beckerath, professor of economics at Duke University, is teaching at the University of Tübingen in Germany during the May to August term. He will also lecture at the Institute of Politics at Munich and at the Universities of Marburg, Cologne, and Bonn.

Gerald E. Warren, professor of economics in the School of Business Administration, Tulane University, is serving as coordinator of the Tulane Society of Economics which was reactivated on February 17. The Society was founded in 1909 and disbanded in 1917 because of World War I. It is the purpose of the Society to increase economic understanding by bringing together business leaders and educators for objective study of economic questions affecting the economic welfare of the region; to encourage a closer working relationship between university faculty members and businessmen of the New Orleans area through mutual exchange of ideas; and to assemble and make available facts and materials to aid in developing policies bearing on economic problems of the South.

* * *

The following names have been added to the membership of the Southern Economic Association:

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Duke University, Durham, N. C.

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Harry Williams, Department of Economics and Finance, University of Houston, Houston 4, Tex.

John T. Zumbro, Millsaps College, Jackson, Miss.

BOOKS RECEIVED

The Frontiers of Economic Knowledge. By Arthur F. Burns. Princeton, N. J.: Princeton University Press, 1954. Pp. ix, 367. $5.00.

Louisiana's Industrial Tax Exemption Program. By William D. Ross. Baton Rouge, La.: Division of Research, College of Commerce, Louisiana State University, 1953. Pp. 87.

Instalment Sales Financing: Its Services to the Dealer. By Clyde William Phelps. Baltimore, Md.: Commercial Credit Co., 1953. Pp. vii, 99.

A Study in Trade-Cycle History: Economic Fluctuations in Great Britain, 1833–1842. By R. C. O. Matthews. New York: Cambridge University Press, 1954. Pp. xiv, 228. $5.00.

Ocean Transportation. By Carl E. McDowell and Helen M. Gibbs. New York: McGraw-Hill Book Co., 1954. Pp. xv, 475. $7.00.

The Growth of Integrated Oil Companies. By John McLean and Robert William Haigh. Boston, Mass.: Division of Research, Graduate School of Business Administration, 1954. Pp. xxiv, 728. $12.00.

Economics: Trends and Issues. By Scott Keyes. 2nd rev. ed. New York: Whittier Books, 1954. Pp. 496. Cloth, $5.00. Paper, $2.90.

Speculative and Flight Movements of Capital in Postwar International Finance. By Arthur I. Bloomfield. Princeton, N. J.: Princeton University Press, 1954. Pp. 88. Paper, $1.00.

Investment Principles and Policy. By Ralph R. Pickett and Marshall D. Ketchum. New York: Harper and Bros., 1954. Pp. ix, 820. $6.00.

Economic Processes and Policies. By William J. Baumol and Lester V. Chandler. New York: Harper and Bros., 1954. Pp. viii, 690. $5.75.

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Economics of Transportation. By D. Philip Locklin. 4th ed. Homewood, Ill.: Richard D. Irwin, 1954. Pp. xiv, 916. $6.50.

Economic Change in America: Readings in the Economic History of the United States. By Joseph T. Lambie and Richard V. Clemence. Harrisburg, Pa.: Stackpole Co., 1954. Pp. 509. $5.75.

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Rate Policies and Rate Practices of the United States Post Office. By Jules Backman. New York: Magazine Publishers Association, 1953. Pp. vi, 215. Paper, $1.00.

Survey of Fertility and Mortality in Poona District. By V. M. Dandekar and Kumudini Dandekar. Poona, India: Gokhale Institute of Politics and Economics, 1953. Pp. xii, 191. Paper, Rs. 5 or 7 s. 6 d.

Readings in Economics from Fortune. Edited by Richard E. Mulcahy. New York: Henry Holt and Co., 1954. Pp. vi, 153. Paper, $1.00.

The Mechanism of Economic Systems: An Approach to the Problem of Economic Stabilisation from the Point of View of Control-System Engineering. By Arnold Tustin. Cambridge, Mass.: Harvard University Press, 1953. Pp. xi, 161. $5.00.

Cost Accounting. By John G. Blocker and W. Keith Weltmer. 3rd ed. New York: McGraw-Hill Book Co., 1954. Pp. xvi, 623. $6.50.

Industrial Traffic Management. By Newton Morton and Frank H. Mossman. New York: Ronald Press Co., 1954. Pp. x, 558. $6.50.

Price Making and Price Behavior in the Petroleum Industry. By Ralph Cassady, Jr. New Haven, Conn.: Yale University Press, 1954. Pp. xx, 353. $4.00.

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